DOCUMENT RESUME

ED 040 209 TE 001 901

AUTHOR	Held, Jeanette R.
TITLE	An Experiment in Teaching Punctuation in the Ninth Grade by Means of Intonation Cues.
INSTITUTION	George Peabody Coll. for Teachers, Nashville, Tenn. Demonstration and Research Center for Early Education.
PUB DATE	Jul 68
NOTE	85p.; M.A. Thesis, George Peabody College for Teachers
EDRS PRICE	EDRS Price MF-$0.50 HC-$4.35
DESCRIPTORS	Composition Skills (Literary), English Instruction, Grade 9, *Intonation, *Linguistic Patterns, Oral English, Programed Instruction, Programed Texts, *Punctuation, *Sentence Structure, *Teaching Methods, Writing Skills

ABSTRACT

In answer to the need for more effective punctuation instruction, a project, based on the theory that an essential relationship exists between intonation and punctuation, was designed for and executed with two 9th-grade student groups--one experimental, the other control. The experimental group received punctuation instruction through the use of taped lessons and corresponding programed exercises, while the control group received no instruction in punctuation. Three types of tests, two objective tests and a written paragraph, were prepared, and all three were administered as pre-tests, post-tests, and retention tests. Although the results showed no significant improvement in the use of end marks, the experimental group demonstrated significant improvement in comma use to set off non-identifying modifiers and within a series. Both groups of students performed the same on the two types of objectives tests, indicating that test design did not influence the results. (Data analysis and tables of findings are included, as well as appendices containing a student booklet, supplementary exercises, tests, raw scores, and samples of student writing.) (JM)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ED0 40209

AN EXPERIMENT IN TEACHING PUNCTUATION IN THE NINTH GRADE BY MEANS OF INTONATION CUES

Jeanette R. Held

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Jeanette R. Held
TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

This report is intended for distribution within the College and the Kennedy Center—as a means of increasing communication among colleagues. Papers are distributed when it is believed that they may be of interest locally; they may or may not be published or presented to conferences off-campus. In the case of unpublished materials, recipients are requested not to circulate, reproduce, review, or quote from the report without specific permission from the author.

TE 001 901

Institute on School Learning and Individual Differences
John F. Kennedy Center for Research on Education and Human Development
George Peabody College for Teachers Nashville, Tennessee 37203

AN EXPERIMENT IN TEACHING PUNCTUATION IN THE NINTH GRADE BY MEANS OF INTONATION CUES

A Thesis
Presented to
the Faculty of the Department of English
George Peabody College for Teachers

---

in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

---

by
Jeanette R. Held
July 1968

ACKNOWLEDGMENTS

Classroom-centered, teacher-directed research such as that described in this paper cannot be accomplished by the teacher alone. I have had the help of more people than I can here acknowledge, but to the five individuals named below I am especially grateful.

Carlotta Joyner Young conducted a comprehensive analysis of the data, and provided help in countless other ways. She was assisted by James Chappell of the Computer Center at Vanderbilt University, who programed the data for computer analysis.

I wish to thank Dr. Raymond C. Norris, who contributed of his time to read the rough draft of the chapter on data analysis, making helpful suggestions for its revision.

I am indebted to Dr. William J. Griffin not only for the idea which prompted the experiment in the first place, but also for his invaluable assistance throughout the course of the project. He has patiently guided me through the design, execution, and account of the experiment.

The task would not have been attempted without the certainty of support from my husband; the support was provided—unfailingly and selflessly.

Grateful acknowledgment is also made for a small grant from the Institute on School Learning and Individual Differences, George Peabody College for Teachers, from funds made available by the Carnegie Corporation of New York.

The writer, of course, is solely responsible for statements made and views expressed in this report.

TABLE OF CONTENTS

Chapter Page

I. INTRODUCTION 1

II. THE RELATION OF PUNCTUATION TO INTONATION . . . 6

III. DESIGN AND PROCEDURES 12

The Design of the Final Study 14
The Final Study 21

IV. DATA ANALYSIS 24

The Objective Tests: Statistical Treatment . 24
The Paragraphs: Statistical Treatment . . . 30
Types of Comma Use: Informal Treatment . . 31

V. INTERPRETATIONS AND IMPLICATIONS 35

APPENDIX I. THE STUDENT BOOKLET 43

APPENDIX II. SUPPLEMENTARY EXERCISES 57

APPENDIX III. THE TESTS 61

APPENDIX IV. RAW SCORES 69

APPENDIX V. SAMPLES OF STUDENT WRITING 75

A SELECTED BIBLIOGRAPHY 78

LIST OF TABLES

Table Page

1. Mean Numbers and Standard Deviations of Errors Made by Each Group at Each Time of Testing with Dictated and Mimeographed Tests 26

2. Summary Table 27

3. Summary Table of Post-Hoc Comparisons Significant at the .05 Level, Two-Tailed Test (Scheffé's Method) 28

4. Total Errors for Both Groups at the Three Times of Writing Original Paragraphs 30

5. Percentages of Needed Commas Omitted in Setting off Modifiers and Separating Words or Word Groups in a Series on Both Tests at Each Time of Testing 32

6. Raw Scores of Commas Omitted in Setting off Modifiers and in Separating Items in a Series for Both Groups at the Three Times of Writing Original Paragraphs 33

7. Percentages of Needed Commas Omitted by Both Groups at Three Times of Writing 34

LIST OF FIGURES

Figure | Page

1. Design of Analysis of Data 25

2. Means of Errors Made by Each Group at the Three Times of Testing, Disregarding Type of Error and Type of Test 29

INTRODUCTION

Ninth-grade writing characteristically reveals a need for instruction in several aspects of punctuation, ranging from the use of the period to separate sentences to the use of paired commas to set off nonidentifying modifiers. The traditional method of instruction—requiring students to learn rules of punctuation stated in syntactic or semantic terms—is not as successful as English teachers would like it to be. Students make the same errors and are re-taught the same rules through four years of high school English. Yet in freshman composition they frequently substitute a comma for a period, or worse, provide a period where none is needed: the comma splice and sentence fragment in the thirteenth year of formal education.

The lack of success may well be due in part to the proliferation of rules[1] which show no underlying unifying principle. Perhaps we English teachers have been overlooking the obvious—the relationship of punctuation to intonation. The modern comma, semicolon, and period, according to Paul Roberts, evolved from the "squiggles" and dots and combinations of the two inserted by priests and preachers of the Middle Ages "so they would know where to pause in delivering their sermons."[2] The reading teacher in the primary grades teaches her young charge to honor the cues provided by punctuation for appropriate oral reading. Perhaps English teachers in the upper grades need to reverse this process by having their students punctuate according to the patterns of stress, pitch, and juncture apparent as they write.

---

[1] See, for example, the chapters on punctuation in John Warriner's English Grammar and Composition 9, rev. ed. (New York: Harcourt, Brace & World, Inc., 1965). Warriner lists nineteen main rules for the use of end marks, commas, semicolons, and colons, with an additional twelve "sub-rules" for the use of the comma. In the introductory paragraphs (p. 494) he notes the relationship between end marks and commas and the intonation of speech, but he emphasizes mastery of the subsequent rules in attaining punctuation skill: "If you [the students] learn the rules in this and in the following chapters, and apply these rules whenever you write, your compositions will not only be correct but also easier to understand."

Linguists see punctuation as representing the intonation of spoken language at least in part. W. Nelson Francis defines punctuation as " . . . a subsystem of the graphic system, primarily operating as a substitute for the suprasegmental features of speech."[3] He agrees with other linguists, however, that the graphic representation of those features is only approximate; there is no one-to-one relationship between the different intonation contours and the eleven common marks of punctuation.[4] Even though the correspondence between intonation and punctuation is not complete, Francis says that there are "points where the two systems coincide."[5] He suggests that instruction in identifying sentence-final contours can help students avoid the "run-on" sentence and the sentence fragment, and that teaching students to recognize the intonation patterns of the nonidentifying modifier will help them in using the comma effectively in separating these modifiers from the rest of the sentence of which they are a part.[6]

---

[2] Paul Roberts, Patterns of English (New York: Harcourt, Brace & World, Inc., 1956), p. 215.

[3] W. Nelson Francis, The Structure of American English (New York: The Ronald Press Co., 1958), p. 595.

[4] Period, question mark, exclamation point, semicolon, colon, comma, dash, hyphen, apostrophe, quotation marks, and parentheses.

[5] Francis, p. 563.

I became aware of the punctuation-intonation relationship at the NDEA Institute in Language and Composition at George Peabody College for Teachers in the summer of 1965. I realized at the time I heard the concept discussed that I had indeed always, without being aware of it, punctuated not by rules, but "by ear." I agreed with the instructor of the language course, William J. Griffin, that "keying punctuation to the way we talk is the most logical way to punctuate."[7] Dr. Griffin suggested that English teachers might prepare taped lessons explaining and illustrating the intonation contours. The lessons could be correlated to copies of unpunctuated exercises which students would punctuate as they heard them read (by means of tape).

The idea offered possibilities for research in my own classroom.

Preliminary investigation revealed little research in the relatively narrow area of teaching students to punctuate by listening to intonation cues. Professor Anthony Tovatt, Chairman of the English Department at Burris Laboratory School, Ball State College, in Muncie, Indiana, hinted at the possibility in his report on a pilot project in which he attempted to improve student writing by means of oral-aural-visual stimuli: the students, individually equipped with specially modified tape recorders, wrote and recorded what they were writing as they wrote; upon finishing their compositions they were able to proofread while listening to the tape, thereby determining whether or not they had written what they had meant to write. Dr. Tovatt made notes as the experiment progressed, and his comments of Thursday, June 14, 1962, include this observation: "Oscar (considerable uncertainty about where to end sentences) for the first time

---

[6] Ibid., pp. 563-64.

[7] Lecture, July 28, 1965.

'heard' where he should have ended several."[8]

Further research disclosed only one additional reference to taped instruction in punctuation. It appeared as a brief summary of an unpublished doctoral dissertation by Lois G. Johnson entitled "Teaching Punctuation with Dictated Lessons." The summary revealed that the students wrote from dictation, the lessons being presented by tape. The researcher "noted slight gains in sentence sense," as well as improvement "in punctuating direct discourse and in placing a comma before a conjunction in a compound sentence."[9]

The hypothesis upon which I based the experiment discussed in this report was that students could be taught by taped-programed instruction to recognize the intonation contours related to end marks and to certain applications of the comma.

I consequently designed and executed a pilot project[10] and, upon finding the results encouraging, designed tests and lessons for the final study. Four lessons were taped, and individual student booklets of corresponding programed exercises were prepared. Three types of tests were designed: two were objective; the third consisted of student-written paragraphs based on models read by the teacher at each time of writing. All three types were to be administered as pretests, posttests, and (one month after the completion of the experimental training) as retention tests. The tests were intended to measure and compare the performance of an experimental group of ninth-grade English students and a control group of English students in the same grade.

---

[8] Anthony Tovatt, "Oral-Aural-Visual Stimuli," English Journal, LIV (March, 1965), 191-95.

[9] Nathan S. Blount (ed.), "Summary of Investigations Relating to the English Language Arts in Secondary Education: 1965," English Journal, LV (May, 1966), 595-96.

[10] The pilot project is discussed in detail in Chapter III.

The control group, of course, received no instruction in punctuation.

The tests were designed to answer the following questions:

(1) Would the experimental instruction result in fewer errors in the use of end marks?

(2) Would the instruction lead the students to improve their punctuation as a result of recognizing the junctures requiring commas in setting off modifiers (introductory elements, words in apposition, and nonidentifying modifiers) and in separating words or word groups in a series?

(3) Would the design of the objective test affect performance? That is, would the experimental group's expected improvement be revealed regardless of whether the students punctuated as they wrote from dictation or whether they punctuated a mimeographed copy of a selection which they had to interpret as they heard it read?

The lessons were designed to cover end marks and the use of the comma only in its function of setting off modifiers and separating words or word groups in a series.

CHAPTER II

THE RELATION OF PUNCTUATION TO INTONATION

When we examine the flow of speech we find that it is not a smooth unbroken stream. It is marked by variations in stress, changes in pitch, and hesitations or abrupt breaks. Some of these phenomena constitute the suprasegmental phonemes of speech; that is, they are linguistically contrastive minimal units that are separate and apart from the twenty-four consonant phonemes and nine vowel phonemes involved in the structure of words in our language. Classified as features of stress, pitch, and juncture, these suprasegmental phonemes (though they have no meaning in themselves) are necessary to convey meaning.

If the written form of the language is to convey meaning efficiently, it must by some means represent at least some of these variations. The writer has at his command a conventional stock of punctuation marks, some of which are related to the intonation of speech, some of which are not.

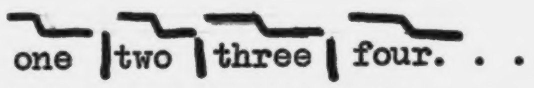
Harold Whitehall classifies the marks of punctuation according to their function. "Each function contrasts with all the others . . . [and] when the same marks of punctuation are used in different functions they are very much like words used in different functions; the grammatical meanings of the marks are different."[1] Whitehall lists the four functions as follows:

---

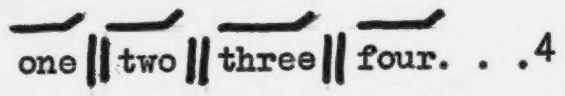
[1] Harold Whitehall, Structural Essentials of English (New York: Harcourt, Brace & World, Inc., 1956), p. 120.

a. To link sentences and parts of words.
b. To separate sentences and parts of sentences.
c. To enclose parts of sentences.
d. To indicate omission.[2]

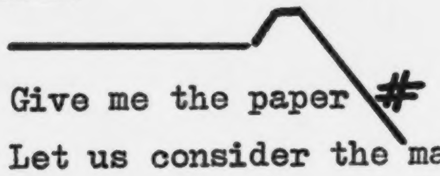
Marks of punctuation related to intonation usually represent one of three types of terminal juncture. The junctures are often given names suggested by symbols used to represent them in phonemic transcriptions. Single-bar juncture is characterized by a prolonged last sound without change in pitch, followed by "abrupt woice cut-off,"[3] as indicated by the lines in the example below:



Double-bar juncture differs from single-bar in the nature of the pause and in feature of pitch: the pause is not as abruptly initiated, and the pitch rises slightly immediately preceding it, as in another kind of counting:



Double-cross juncture is the most frequently heard final juncture pattern in English. Marked by a sharp drop in pitch and a fading of the last syllable into silence, it is the juncture regularly heard at the ends of statements and commands:



Let us consider the marks of punctuation of each functional group and their relation to the three terminal junctures.

---

[2] Ibid.

[3] Ibid., p. 30

[4] W. Nelson Francis, The Structure of American English (New York: The Ronald Press Co., 1958), p. 157.

In linking sentences or parts of sentences we use the semicolon, colon, and linking dash. They often indicate the double-cross juncture, usually with a quite brief pause. Their primary purpose is to direct attention: the colon forward, the dash backward; the semicolon is used most commonly to link subject-predicate word groups of equal emphasis.[5] The hyphen links words and parts of words;[6] its relation to intonation is variable. When used to link the components of a compound modifier, it may indeed mark the absence of the single-bar juncture, as illustrated by Francis in his comparison of the present participle to the compound adjective:

a. a man eating fish b. a man-eating tiger

The single-bar juncture is heard in reading man eating in example a; no terminal juncture is heard between the two words when reading b.[7] The hyphen also links parts of words when the word must be divided at the right margin; in this instance it bears no relation to intonation.

All the separating marks have a relationship to intonation. These marks include the separating comma, the question mark, the exclamation point, and the period. The separating comma may signal either the single- or double-bar juncture.[8] It is used to separate a direct quotation from the rest of the sentence, to mark a pause often necessary for meaning between introductory elements and the rest of the sentence, to separate words or word groups in a series, and, with a conjunction, to separate clauses that deserve

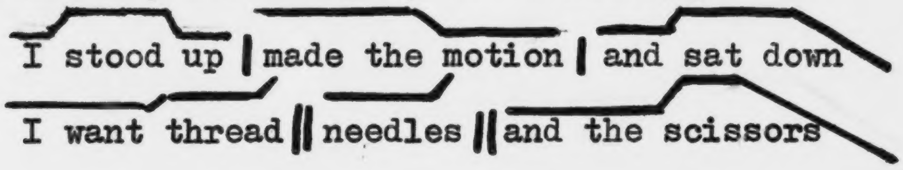
---

[5] Whitehall, p. 121.

[6] Ibid., p. 12.

[7] Francis, pp. 275-76.

[8] Consider, for example, the following:



I stood up | made the motion | and sat down

I want thread || needles || and the scissors equal emphasis. A question mark usually signals rising pitch on the final sounds of the word preceding it when no interrogative word introduces the sentence; this is the double-bar juncture. The question mark may signal the falling pitch of the double-cross juncture when the sentence has been introduced by an interrogative word. The exclamation point usually symbolizes sharply rising or falling tone;[9] it indicates strong feeling or excitement. The period represents the double-cross juncture. Unlike the comma, exclamation point, and question mark—each of which may represent at least two terminal junctures, the period represents only the sentence-final contour heard at the end of a declarative statement.

The most commonly used marks of enclosing punctuation are paired commas, which enclose, or set off, words or word groups that add information about the entire sentence or about a word within it. They bear a definite relation to intonation. They may in fact serve to indicate intonation that differentiates between two possible meanings:

> The test, covering Shakespeare, will be given tomorrow.
> The test covering Shakespeare will be given tomorrow.

The first sentence implies that only one test will be given; it covers Shakespeare. The second implies that only the test covering Shakespeare will be given tomorrow; another on additional material will come earlier or later. The commas in the first sentence represent single-bar junctures. However, enclosed word groups may be preceded and followed by either single- or double-bar juncture. Paired brackets, which serve to enclose interpolated material, may or may not suggest the pattern described above. The intonation signaled by parentheses is like that of the paired dashes, but lighter.[10]

---

[9] Whitehall, p. 126.

[10] George Summey, Jr., American Punctuation (New York, 1949), p. 7. Summey discusses several punctuation marks in terms of their "pause value," observing, however, that "the various marks have no definite pause values, and [that] even relative values are variable."

Paired dashes indicate the intonation patterns of paired commas; the pauses, however, are usually more abrupt. The last of the enclosing marks, quotation marks, show no direct relation to intonation.

Of the four groups, omission punctuation shows least relation to intonation. With the exception of the dash serving to indicate suspense, interruption, or hesitation (in which case there is a level-pitch terminal juncture), these marks are morphological. They indicate missing letters or words, and, in the case of the apostrophe, mark the possessive form of nouns, often distinguishing the possessive from the plural form. (Apostrophes also mark plurals of letters, signs, and words cited as things, not used for their meanings.)

Of the four functional groups, separating punctuation shows the most obvious relationship to intonation, and it is with these marks that the ninth-grader is most familiar. Although he may occasionally omit a period between sentences, when he focuses his attention on punctuation he knows that a statement is followed by a period and a question by a question mark. He usually also knows to separate single-word items in a series with commas, although he is not sure that he needs one before the conjunction. He may not know that introductory word groups are often set off; in fact, he is likely to be unaware of the usefulness of such structures of modification—he seldom uses them unless specifically told to do so. He is confused by the distinction between the so-called restrictive and nonrestrictive modifiers, and seems oblivious to the convention requiring a comma *after* as well as *before* a sentence modifier in medial position. He is bewildered by the terms *participial phrase*, *infinitive phrase*, *interrupter*, *adverb clause*, and *noun clause*.

Yet all the above constructions are identified by intonation as either modifying the entire sentence or modifying an element within it, and if they modify a sentence, they are usually set off by commas. If the average ninth-grader could be taught to identify the intonation patterns for which he already supplies commas,[11] he might, by means of taped instruction be taught to recognize those contours when they serve in functions other than separation. And if the patterns become fixed in his mind to the extent that the desired response is made on hearing a given pattern, he should be able to recognize the pattern as he writes, and to supply the appropriate mark of punctuation.

---

[11] When he separates items in a series, for example.

CHAPTER III

DESIGN AND PROCEDURES

To explore the possibility that practice in recorganizing intonation patterns may increase competence in punctuating, a pilot project was conducted in May, 1966, in a ninth-grade English class at Lawrence County High School, in Lawrenceburg, Tennessee. The class, which had thirty members, was one designated as "average." Eight randomly selected students constituted an experimental group; the rest of the class made up the control group. The experiment was confined to an attempt to teach pupils in the experimental group to set off nonidentifying word groups introduced by who, which, or whose.

A tape was prepared which was correlated to a student booklet containing illustrative and practice exercises. The first lesson introduced the concepts of stress, pitch, and juncture and their relation to the period. The second lesson introduced the intonation contours represented in writing by the comma. Exercises required the insertion of the comma when intonation indicated that a structure of modification introduced by who, which, or whose simply added information rather than identified or limited what it modified.

Two structurally similar tests were prepared; one was to be administered as a pretest and the other as a posttest. Each consisted of ten sentences, with each sentence containing a word group introduced by who, which, or whose. In six sentences of each test, these word groups were identifying; in the other sentences they were not. Additional tests consisted of two unpunctuated paragraphs (one as pretest, one as posttest); a copy was to be given to each student to be punctuated as the teacher read the selection.

The pretests were administered to the entire class, and members of the experimental group were chosen. These eight students then moved to an improvised listening center which had been arranged by placing a tape recorder on a desk[1] and attaching eight headphones to the recorder by means of a distribution device. The headphones allowed each student to receive more or less "individualized" instruction, with distracting classroom noises being reduced to a minimum. The experimental group completed the taped lessons while the control group read. All students were given posttests the following day.

The pilot project revealed both strengths and weaknesses in the program as designed. The students enjoyed the exercises, and test scores showed improvement. The tests, however, were inadequate and poorly designed. The scope of the lessons was too limited: there was a question as to whether the students had punctuated solely by intonation cues or by the visual cue offered by the relative pronouns.

It seemed advisable to broaden the scope of the lessons in the final study to include instruction in the use of the comma to separate introductory elements and words or word groups in a series, to set off appositives, and to enclose all types of nonidentifying modifiers.[2] It was decided that the final study, like the pilot study, would begin with the relation between intonation and the period, but would also include instruction in the use of the question mark and exclamation point.

---

[1] The classroom was furnished with old-fashioned fixed desks.

[2] Nonidentifying modifiers, as discussed in this paper, include appositives and sentence-modifiers, which are listed by W. Nelson Francis, The Structure of American English (New York: The Ronald Press Co., 1958), pp. 400-405, under six headings: included clauses (the adverbial clause), absolute constructions, infinitives, participles, prepositional phrases, and adverbs.

The Design of the Final Study

The final study was designed so that two classes of equally matched ninth-grade English students were compared in punctuation ability after only one of the classes had received taped-programed instruction in the intonation-punctuation relationship.

In order to compare the two groups before and after the experimental instruction, three different types of tests were designed; a test of each design was administered to both groups at each of three times of testing.[3] Analysis of data from pretests, posttests, and retention tests (administered one month after posttests) was concerned with interactions among kinds of punctuation errors, types of tests, times of testing, and performances of groups.

The experimental instruction itself consisted of a series of taped lessons in which intonation contours peculiar to end marks and commas were explained and, more important, illustrated. Accompanying the tape was a student booklet containing sentences illustrating the contours, and exercises which progressed in difficulty from simple subject-predicate word groups to sentences containing nonidentifying words or word groups distinguished as such only by intonation cues. The students, following taped commentary, observed the correct placement of the marks of punctuation in the examples as they heard the contours, and they supplied punctuation to the exercises as they heard them read.

Also included in the design were four unpunctuated mimeographed exercises which were distributed to the students at intervals between the taped sessions. As the teacher read the exercises the students punctuated. Since these exercises allowed the student to diagnose his mastery of punctuation, and since they were self-scored immediately on completion, they enabled him to measure his improvement.

---

[3] Tests, instruction, and supplementary instruction will be discussed in detail later in this chapter.

In addition, they provided reinforcement of the principles presented in the lesson just completed.

The Students

The experiment was conducted at Lawrence County High School, which has an enrollment of about 1000 students. I taught four so-called "average" ninth-grade English classes. In selecting classes for the experimental and control groups, the first consideration was distribution of class members according to sex, the second was paragraph comprehension scores as determined by Stanford Achievement Tests, and the third was outside influences.

Two of the four classes were fairly evenly divided according to sex; one class contained eleven boys and twelve girls, and the other contained fifteen boys and eleven girls. In addition, the average test scores showed very little difference in reading level; the average for one class was eighth grade, fifth month, and the other, eighth grade, sixth month. Outside influences were negligible for both classes; each met for an uninterrupted sixty-minute period: the first at 9:15, and the second at 12:55.

The afternoon class became the experimental group and the morning class the control group. Nineteen students in each group attended school regularly enough to take all tests and, in the experimental group, to participate in all lessons.

The students in both groups were typical of ninth-graders in a small-town high school. Some came from comfortable surburban homes. Some rode busses from the hills and ridges of Lawrence County. Each class contained one or two of the high school "in group"; each contained a few students who were culturally deprived. Two students of the experimental group were Negroes--bright, alert youngsters whose academic progress and acceptance were unquestionable.

The Tests

Two tests were designed so that results could be measured objectively; a third required each student to write a 150-word paragraph at each time of testing based on a teacher-read model.

One of the objective test designs consisted of mimeographed[4] copies of a 340-word teacher-written selection in which all punctuation (and all signaling capitalization) was omitted. The students were to insert punctuation on their copies as they heard the selection read. Some of the introductory elements were by intonation set off, others were not. Five nonidentifying word groups required commas, four identifying word groups did not. Four examples of series appeared in the test. The design was repeated for post- and retention tests:[5] each test contained the same type and number of modifiers and words or word groups in a series; i.e., comma requirements at the three times of testing were the same. The number of end marks required varied slightly, however, as did the number of words. The topics differed at each time of testing.

The second design consisted of seven groups of sentences to be written from dictation.[6] The sentences were carefully planned to include various types of modifiers, some of which required commas and others that did not. A total of twenty-six commas and fifteen stops were required. Structurally identical tests were prepared to be administered as post- and retention tests (see Appendix III, pages 61-63).

The third type of test required each student to write a 150-word paragraph based on a teacher-written model at each of the three times of testing.[7] Topics for these writing assignments were chosen which could logically be developed by the inclusion of structures of modification and words or word groups in a series.

---

[4] For the sake of convenience this design will be referred to as the "mimeographed" test throughout the remainder of this report.

[5] The three mimeographed tests appear in Appendix III, pp. 63-66.

[6] Hereafter called the "dictated" tests.

The Instruction

The programed instruction was designed to conform to the principles outlined by William F. Marquardt before the English Language Section of the Annual NAFSA Convention in Washington, D.C., April, 1962. Although he was speaking of programed instruction as it applies to teaching a second language, the principles apply to the teaching of the "language" of intonation. They are:

1. Plan instruction to shape behavior—not to teach rules.
2. Plan program in terms of desired behavior of the student.
3. Build on what the student already knows.
4. Use small steps in working from the known to the unknown.
5. Present each step so that the student's response can be readily reinforced by letting him know when he has made the desired response.

Further, Marquardt recommended that the material be presented in three "modes." The first is the familiarization mode, which is developed in three steps: the new concept is presented orally or visually or both; exercises are provided requiring a response; and finally, the desired response is indicated. The next, the learning, mode omits the presentation; it includes several exercises requiring responses, which as in the first mode, are checked after completion of each frame. The third mode tests.[8]

---

[7] Models appear in Appendix III, pp. 67-68. Of the three models included, only the last is a verbatim copy of the one read to the students. The first two were lost in the welter of papers constantly in transition between English teacher and students. The first two model paragraphs were reconstructed from memory, and represent fairly accurate versions of those read to the two groups. (The same model was read to both classes at pretest and the same at posttest.)

The three modes provided the pattern for each mark of punctuation covered in the lessons. In the familiarization mode the student heard (through his headphone) a description of the intonation contour under consideration, and—more important—heard the contour illustrated, in both slow and normal tempo. As he heard the contour he saw before him the mark used to represent the intonation pattern. One or more frames presented examples of punctuated sentences—either single or grouped, depending on the presence or absence of contrasting patterns. The learning mode included several frames, in each of which the student was asked to punctuate one or two or three sentences; he was told what the desired response was before going on to the next frame. The testing mode consisted of one or more relatively long selections requiring all the marks of punctuation used in the preceding exercises.

The Lessons

Lesson One began with an introduction (on tape) to the concept of punctuation as representing the intonation of speech. Students were requested to open their booklets[9] to frame 1, which contained three (punctuated) sentences. These were read, and attention was directed to the periods as representing the sentence-final contour. In this way the student was familiarized with the relationship. Frames 2 and 3 each contained three rather long unpunctuated sentences; the students were required to insert the missing periods, being guided only by the taped reading of the exercises. (Before frame 2 was read, the practice of eliminating capitalization when it might serve as a visual clue to a sentence end was explained.) Subsequent frames presented pairs of items; one item consisted of one sentence, the other of two. Frame 9 illustrated the question mark; frames 10 and 11 required the students to supply a question mark at the end of one of two identically worded sentences and a period at the end of the other. Use of the exclamation point was covered in the same manner. The first lesson ended with three test frames requiring end punctuation.

---

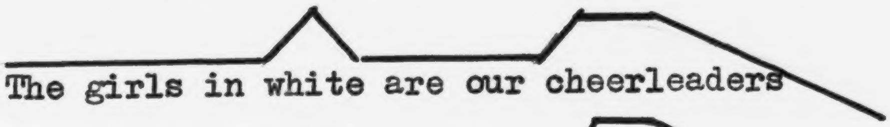
[8] William F. Marquardt, "Programmed Instruction: General Principles for the Teaching of English as a Second Language," Language Learning XIII, (1963), 77-83.

[9] A copy of the lessons as presented in the student booklet appears as Appendix I, pp. 43-56.

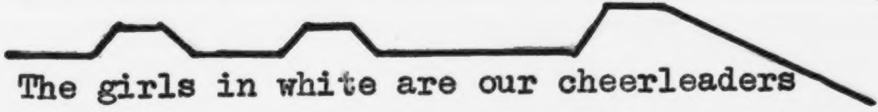
Lesson Two began with a review of end punctuation and introduced the semicolon as a mark of substitution for the period. Its use between closely related sentences when the second is introduced with a sentence connector was explained. Frames 36 through 39 contained sentences requiring the semicolon before sentence connectors. The use of the comma to separate the connector from the rest of the sentence was discussed. Subsequent frames illustrated and required commas after connectors and multiple-word introductory elements such as adverbs, prepositional phrases, and adverbial clauses. The comma used to separate items in a series was discussed; attention was directed to the juncture preceding the conjunction. Frame 60, the last in Lesson Two, consisted of an unpunctuated selection of some three hundred words. Introductory words and word groups in this selection included elements not requiring separation by punctuation as well as those that did require such separation. They included adverbs, adverbial clauses, participal phrases, prepositional phrases, and absolute constructions.

Like Lesson Two, Lesson Three began with several frames of review exercises. Introduced in this lesson was the comma in its function of enclosing sentence modifiers and nonidentifying relative clauses. Frame 70 familiarized the students with the concept of the sentence modifier moved from introductory to medial position, where it is usually enclosed.

Frames 71 through 89 developed the concept of intonation differences between identifying and nonidentifying word groups. Frame 72, for example, presented identically worded sentences, which the tape revealed as showing the following intonation contours:



a. The girls in white are our cheerleaders



b. The girls in white are our cheerleaders

The explanation was made that the first sentence means that only the girls in white are our cheerleaders while the intonation pattern of the second sentence indicates that all the girls are our cheerleaders, and they happen to be dressed in white. In the first sentence attention is directed to the color white; in the second, to the fact that all the girls are cheerleaders. The students punctuated several pairs of sentences in which identical included word groups were used to convey different meanings, requiring or not requiring commas. A selection for testing concluded the lesson.

Lesson Four consisted of ten frames, each of which presented exercises requiring the different marks of punctuation. The last two frames, 99 and 100, contained paragraphs of ninety and one hundred words.

In all the lessons the emphasis was on punctuating according to the intonation natural in speech when communicating a given meaning. Terms such as "adverbial clause," "appositive," "participal phrase," and "infinitive" were avoided. The distinction between a descriptive modifier (separated by either the single- or double-bar juncture in speech and by the comma in writing) and an identifying modifier (not separated in either speech or writing) was explained only in terms of the contrasting intonation patterns. No attempt was made to teach grammatical concepts. Intonation cues alone served as guides to punctuation.

The Final Study

The execution of the experiment, including pretests and posttests, covered a period of four weeks. On March 6, 1967, each student in both groups wrote a 150-word paragraph after hearing a model theme read. Written within the class period, the paragraphs were not revised. The students were asked, however, to reread their work carefully, with attention to punctuation, before submitting it.

On March 7 all students were given the first of the mimeographed tests. They were asked to punctuate as the selection was read to them—once in slow tempo to allow time for punctuation insertion, and again at normal speed in order to allow the students to "check" their punctuation. An effort was made to read the selection to both groups in the same way.

On the third day all students wrote from dictation the seven groups of sentences. This design proved to be an arduous task for both teacher and students. The sentences were read in exaggerated slow tempo to allow time for writing; they were read at normal tempo a second time.

A tape recorder, equipped with eight headphones,[10] was set up for the experimental group each day. In groups of eight the subjects donned the headphones, heard the tape, and followed its instructions concerning the exercises in their booklets. When all had completed Lesson One, they were given the first of the mimeographed supplementary exercises, which required the insertion of ten periods and one question mark (see Appendix II, page 57). Each student scored his own exercise. Lesson Two, because of its length, was divided into two sessions and required four class periods. Prior to the second session (in which the comma junctures were introduced), the students were given a supplementary exercise which served as a mastery test of end punctuation and a diagnostic test for the ability to use the comma correctly (see Appendix II, page 57). Informal scoring revealed mastery of end marks but little understanding of the use of the comma. The groups completed the second session, in which they practiced the use of the comma after introductory word groups. Upon its completion they were asked to punctuate a third supplementary exercise in which intonation cues signaled commas after fourteen of seventeen introductory elements (see Appendix II, page 58. After scoring their exercises, the students were able to see considerable improvement in the use of the comma. Lesson Three, illustrating the distinction between the identifying and nonidentifying modifier, and the intonation patterns distinguishing each, was completed and followed by the last of the supplementary exercises, which consisted of fifteen unpunctuated sentences plus five sentences dictated by the teacher—each of the twenty sentences containing a modifier in medial position (see Appendix II, pages 59-60). Lesson Four, consisting of review exercises, was completed in two days. Lessons and supplementary exercises had required ten class periods.

---

[10] The arrangement was the same as that used the preceding year in the pilot project. See p. 13.

Posttests were begun on March 29 with the second of the mimeographed selections. On March 30 the second dictated tests were given, and on April 3, all students wrote paragraphs. Four weeks later retention tests were administered.

Both control group and experimental group were engaged in the Scholastic unit "Survival" during the course of the experiment. The control group heard no references to punctuation during the month of the experiment other than the caution to punctuate carefully at the three times of testing; their class periods were taken up in the study of the unit anthology. Members of the experimental group read the unit paperback books when not doing the experimental exercises.

Both groups were told at the beginning that an experiment was being conducted. Members of the experimental group were asked to keep discussion of the procedure outside class to a minimum; they were told that in this way the data would be more valid, and that the others would have an opportunity to hear the taped lessons before the end of school if the results warranted it.[11]

---

[11] The control group and two additional ninth-grade English classes received the instruction before the end of the year.

CHAPTER IV

DATA ANALYSIS

Data accumulated from the objective tests as well as student-written paragraphs were submitted to statistical analysis. The statistical treatment of results of the objective tests, however, was different from that applied to the original paragraphs. The data analysis relating to the objective tests will be presented first, and will be followed by that relating to the paragraphs.

At the end of this chapter, an additional breakdown of data on the specific types of comma uses will be presented without refined statistical treatment.

The Objective Tests: Statistical Treatment

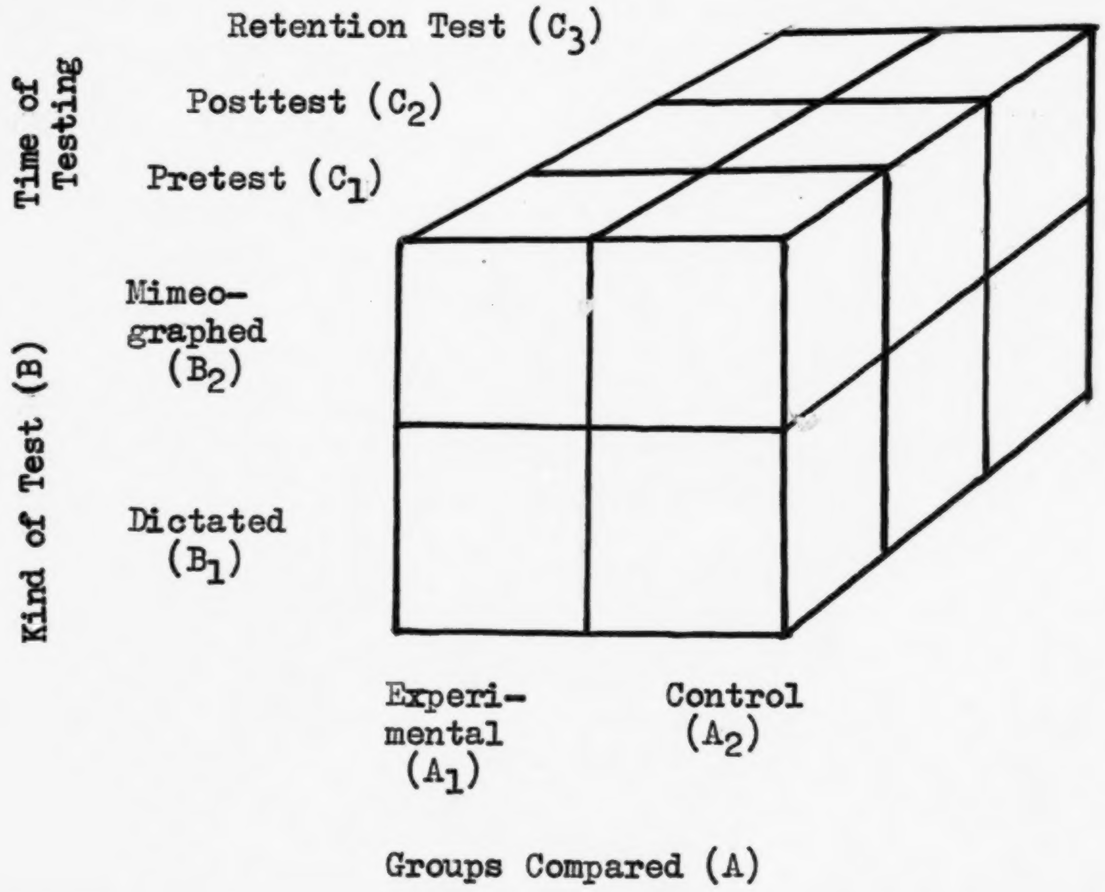
The research design in analyzing results of the objective tests had four demensions; it differentiated not only two groups of subjects, three types of tests, and three times of testing but also four categories of errors. They were: (1) stop omission (failure to use any mark of punctuation where an end mark was required or substitution of a comma for an end mark), (2) stop commission (placement of a period resulting in a sentence fragment[1] and substitution of a semicolon for a comma[2]), (3) comma omission (failure to provide a comma to set off modifiers where either intonation or meaning, or both, required one and failure to insert commas between words or word groups in a series), and (4) comma commission (placement of a comma where neither intonation signal nor the demands of the conventions of punctuation required one[3] and placement where not allowed by conventions even though possibly signaled by intonation[4]).

---

[1] For example: "Playing before a crowd numbering in the hundreds."

[2] This error was placed in the stop commission category because the lessons had dealt with the semicolon only in its function of replacing the period.

The four aspects of the problem may perhaps be more clearly understood by referring to Figure 1 below, in which the group of twelve cells represents one category of error, with each individual cell representing that error on one kind of test at one time of testing with one group of students.


Retention Test (C_3)
Posttest (C_2)
Pretest (C_1)
Time of Testing
Mimeographed (B_2)
Dictated (B_1)
Kind of Test (B)
Experimental (A_1)
Control (A_2)
Groups Compared (A)

Note: Categories of errors, to each of which the three-dimensional analysis was applied, were designated as follows: stop omission (D_1), stop commission (D_2), comma omission (D_3), and comma commission (D_4).

Fig. 1—Design of analysis of data

---

[3] For example: "The foot is divided into three major parts called, the tarsus, ..."

[4] For example: "First, is the carpus . . . ."

The mean scores and standard deviations of errors are shown in Table 1.[5]

TABLE I

MEAN NUMBERS AND STANDARD DEVIATIONS OF ERRORS MADE BY EACH GROUP AT EACH TIME OF TESTING WITH DICTATED AND MIMEOGRAPHED TESTS

Time of Testing		Experimental Group (A_1) N = 19							
		Dictated Tests				Mimeographed Tests			
		D_1	D_2	D_3	D_4	D_1	D_2	D_3	D_4
C_1	Mean	1.21	1.42	8.42	2.58	1.21	1.42	14.84	2.05
	S.D.	1.03	1.71	4.31	1.98	0.92	1.89	8.13	2.04
C_2	Mean	0.79	0.74	2.32	0.32	0.11	0.26	1.79	0.16
	S.D.	0.92	1.15	1.95	0.58	0.32	0.45	1.84	0.37
C_3	Mean	0.68	0.58	2.00	0.42	0.37	0.37	0.89	0.63
	S.D.	1.11	0.90	2.11	0.69	0.60	0.76	1.29	0.68
Time of Testing		Control (A_2) N = 19							
		Dictated Tests				Mimeographed Tests			
		D_1	D_2	D_3	D_4	D_1	D_2	D_3	D_4
C_1	Mean	2.00	0.68	9.21	2.58	0.84	1.47	17.11	1.16
	S.D.	2.03	1.00	5.23	2.29	1.07	1.84	6.92	1.01
C_2	Mean	2.16	0.47	10.89	1.05	1.42	0.53	12.95	1.79
	S.D.	2.22	1.02	5.65	1.47	1.68	1.17	6.27	2.07
C_3	Mean	1.74	0.42	9.68	1.21	1.68	0.53	11.11	0.84
	S.D.	2.10	1.02	6.92	1.69	1.34	1.31	6.81	1.21

Key

C_1 = Pretest
C_2 = Posttest
C_3 = Retention Test

D_1 = Stop Omission
D_2 = Stop Commission
D_3 = Comma Omission
D_4 = Comma Commission

---

[5] The scores of the individual students may be seen in Appendix IV, pp. 69-72.

The analysis of variance, testing the significance of differences in the four dimensions mentioned above and all possible interactions, yielded F-ratios indicating significant differences, which are given in Table 2.

TABLE 2

SUMMARY TABLE*

Source of Variation	Sum of Squares	d.f.	Mean Square	F-Ratio	Prob.
A	910.001	1	910.001	27.973	<.01
SS/A	1171.140	36	32.532		
B	56.501	1	56.501	16.959	<.01
AB	17.685	1	17.685	5.308	<.05
B*SS/A	119.939	36	3.332		
C	862.243	2	431.122	133.877	<.01
AC	360.897	2	180.449	56.035	<.01
C*SS/A	231.860	72	3.220		
D	9350.828	3	3116.943	94.796	<.01
AD	1768.608	3	589.536	17.930	<.01
C*SS/A	3551.104	108	32.881		
BC	114.700	2	57.350	19.630	<.01
ABC	8.450	2	4.225	1.446	>.05
BC*SS/A	210.351	72	2.922		
BD	374.424	3	124.808	34.072	<.01
ABD	57.010	3	19.003	5.188	<.01
BD*SS/A	395.606	108	3.663		
CD	1084.958	6	180.826	38.477	<.01
ACD	475.270	6	79.212	16.855	<.01
CD*SS/A	1015.106	216	4.700		
BCD	479.572	6	79.929	26.662	<.01
ABCD	9.736	6	1.623		
BCD*SS/A	647.525	216	2.998		
Total	23273.516	911	25.547		

*Readers are referred to the symbol key accompanying Table 1.

Further breakdowns of the dimensions and interactions showing significant differences were achieved by means of Scheffé's method for testing post-hoc comparisons, using a two-tailed test[6] and significance level of .05. Table 3 gives the results of these breakdowns.

TABLE 3

SUMMARY*TABLE OF POST-HOC COMPARISONS SIGNIFICANT AT THE .05 LEVEL, TWO-TAILED TEST (SCHEFFÉ'S METHOD)

Analysis of Variance Source of Variation	Significant Comparisons		
AC (Groups x Times)	A_1C_1	vs.	A_1C_2
	A_1C_1	vs.	A_1C_3
	A_2C_1	vs.	A_1C_2
	A_2C_1	vs.	A_1C_3
	A_1C_2	vs.	A_2C_2
	A_1C_2	vs.	A_2C_3
	A_2C_2	vs.	A_1C_3
	A_1C_3	vs.	A_2C_3
CD (Times x Types of Error)	C_2D_3	vs.	C_1D_3
	C_3D_2	vs.	C_3D_3
BCD (Tests x Times x Types of Error)	$B_1D_3C_3$	vs.	$B_1D_1C_3$
	$B_2D_3C_1$	vs.	$B_1D_3C_1$
	$B_2D_3C_1$	vs.	$B_2D_3C_2$
ABD (Groups x Tests x Types of Error	$A_1B_2D_2$	vs.	$A_1B_2D_3$
	$A_1B_2D_4$	vs.	$A_1B_2D_3$
	$A_2B_2D_3$	vs.	$A_1B_2D_3$
	$A_2B_1D_3$	vs.	$A_1B_1D_3$
BD (Tests x Types of Error)	B_1D_2	vs.	B_1D_3
BC (Tests x Times)	B_2C_1	vs.	B_2C_2

*Readers are referred to the symbol key accompanying Table 1.

---

[6] W.L. Hays, Statistics for Psychologists (New York: Holt, Rinehart & Winston, 1965), pp. 484-85.

TABLE 3—Continued

Analysis of Variance Source of Variation	Significant Comparisons		
AD (Groups x Types of Error)	A_1D_1	vs.	A_2D_3
	A_1D_2	vs.	A_2D_3
	A_1D_4	vs.	A_2D_3
	A_2D_1	vs.	A_2D_3
	A_2D_2	vs.	A_2D_3
	A_2D_3	vs.	A_2D_4
ACD (Groups x Times x Types of Error)	$A_1C_1D_3$	vs.	$A_1C_2D_3$
	$A_1C_1D_3$	vs.	$A_1C_3D_3$
	$A_1C_3D_3$	vs.	$A_2C_1D_3$
	$A_2C_1D_3$	vs.	$A_1C_2D_3$
	$A_2C_3D_3$	vs.	$A_1C_2D_3$

The significant findings considered most pertinent to this study were as follows:

1. The experimental group showed a significant decrease in total errors on posttests with no difference between post- and retention tests; the control group showed no such decrease. The differences between the two groups are graphically illustrated in Figure 2.

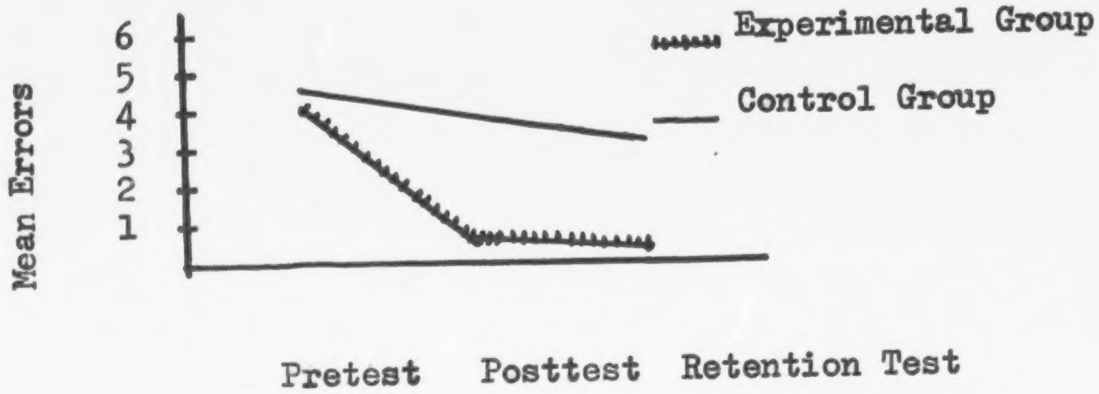


Fig. 2.—Means of errors made by each group at the three times of testing, disregarding type of error and type of test.

2. In order to determine which of the four categories of errors showed a significant decrease, the investigator

looked at each group's mean errors in each category at each time of testing. In the performance of neither the experimental nor control group did post- and retention tests show a statistically significant decrease in errors in the categories of stop omission, stop commission, or comma commission. The experimental group, however, significantly decreased its errors of comma omission, while the control group did not.

3. The nonsignificance of ABC (see Summary Table, page 27) means that the addition of tests as another dimensions did not change the overall picture: both tests (B_1 and B_2) showed significant improvement in the comma omission category with the experimental group.

The Paragraphs: Statistical Treatment

The errors on the paragraphs were tabulated as they occurred within the first one hundred words of each paragraph and were placed in categories identical to those of the objective tests. Total errors made by both groups are given in Table 4 below. Included in the table are the total numbers of stops and commas needed.

TABLE 4

TOTAL ERRORS FOR BOTH GROUPS AT THE THREE TIMES OF WRITING ORIGINAL PARAGRAPHS

Time of Testing	Experimental Group (N = 19)					
	Stop Omission	Stop Commission	Stops Needed	Comma Omission	Comma Commission	Commas Needed
Pre	4	2	126	87	5	289
Post	4	1	124	24	12	180
Retention	3	1	127	38	16	169

	Stop Omission	Stop Commission	Stops Needed	Comma Omission	Comma Commission	Commas Needed
Pre	0	4	126	63	4	236
Post	1	1	165	39	2	109
Retention	7	1	143	84	3	144

Few errors other than comma omission occurred; therefore it was decided to use only that category in the statistical analysis. There were two dimensions to the analytical design: (1) groups and (2) times of testing. Since the possible number of commas needed varied from one student to another, the number omitted by each student was divided by the number needed to obtain the percentage of commas omitted, which was the datum used in the analysis.[7]

Friedman's two-way analysis of variance[8] showed no significant differences at the .05 level between the percentage of commas omitted at the different times of testing for either the experimental or control group.

The Kolmogorov-Smirnov two-sample test[9] was used to test the significance of any difference between the experimental and control groups at each time of testing, using the .05 level of confidence. For each time of testing, the percentage of errors was divided into ten intervals. For each group, a cumulative frequency distribution was developed, using the same interval for both distributions. Significance was determined by the difference between the cumulative frequency of the two groups at any interval exceeding the appropriate critical value. There were no significant differences on pre- or posttests, but the experimental group made significantly fewer comma omission errors on the retention tests than did the control group.

Types of Comma Use: Informal Treatment

When the errors made on the tests were tabulated, a pattern regarding the use of commas appeared to emerge; there seemed to be more commas omitted in separating modifiers as required by intonation or meaning, or both, than in separating items in a series. An informal analysis was made in an effort to determine (1) the relationship between the percentages of errors in the two categories and (2) the errors made in the individual categories by the experimental group at the three times of testing.

---

[7] The individual scores (and percentages) may be found in Appendix IV, pp. 73-74.

[8] Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences (New York: McGraw-Hill, 1956), pp. 127-36 and 166-72.

[9] *Ibid.*, pp. 47-52.

A breakdown of the comma omission errors made on the objective tests, totaled from each group, was tabulated. The raw scores, when converted to percentages (see Table 5, below) revealed that both groups always omitted more of the commas signaled between sentence modifiers and the rest of the sentence than between items in a series, though the experimental group's differences on the mimeographed post- and retention test were negligible.

TABLE 5

PERCENTAGES OF NEEDED COMMAS OMITTED IN SETTING OFF SENTENCE MODIFIERS AND SEPARATING WORDS OR WORD GROUPS IN A SERIES ON BOTH TESTS AT EACH TIME OF TESTING

Time of Testing	Experimental Group (N = 19)			
	Mimeographed Tests		Dictated Tests	
	Setting Off Modifiers	Separating in Series	Setting Off Modifiers	Separating in Series
Pre	58.1%	25.6%	37.4%	15.8%
Post	6.0	5.9	11.0	1.7
Retention	3.3	2.0	9.7	.9
	Control Group (N = 19)			
	Mimeographed Tests		Dictated Tests	
	Setting Off Modifiers	Separating in Series	Setting Off Modifiers	Separating in Series
Pre	64.8%	35.5%	42.9%	10.5%
Post	53.1	15.8	50.3	14.0
Retention	44.7	15.8	43.4	16.7

Both groups made fewer errors in both categories on the mimeographed post- and retention tests, with the experimental group making considerably fewer than the control group. In assessing the experimental group's errors at each time of testing, (point 2 above), the researcher noted that progressively fewer errors were made in both categories at each time on both types of tests.

The paragraph comma errors were subjected to the same breakdown. Total commas omitted and total needed for each group at all times of testing are given in Table 6.

TABLE 6

RAW SCORES OF COMMAS OMITTED IN SETTING OFF MODIFIERS AND IN SEPARATING ITEMS IN A SERIES FOR BOTH GROUPS AT THE THREE TIMES OF WRITING ORIGINAL PARAGRAPHS

Time of Testing	Setting Off Modifiers		Separating Items in a Series	
	Omitted	Needed	Omitted	Needed
	Experimental Group			
Pre	58	83	29	206
Post	21	126	3	54
Retention	36	110	2	59
	Control Group			
Pre	48	61	15	175
Post	30	51	9	58
Retention	81	112	3	32

It may be noted that in writing,[10] as on the objective tests, both groups at all times of testing omitted more commas in setting off structures of modification than in separating items in structures of coordination. This difference may be more easily seen by considering the table below, in which the totals appearing in Table 6 are converted to percentages.

---

[10] Samples of paragraphs written by a student from each group may be seen in Appendix V.

TABLE 7

PERCENTAGES OF NEEDED COMMAS OMITTED BY BOTH GROUPS ON PARAGRAPHS AT THREE TIMES OF WRITING

Time of Testing	Setting Off Modifiers		Separating Items in a Series	
	Experimental Group	Control Group	Experimental Group	Control Group
Pre	69.9%	78.7%	14.1%	8.6%
Post	16.7	58.8	5.6	15.5
Retention	32.7	72.3	3.4	9.4

Interpretations and conclusions based on the data considered in both formal and informal analysis will be presented in Chapter V.

CHAPTER V

INTERPRETATIONS AND IMPLICATIONS

The questions to be answered experimentally, as enumerated in the introductory chapter of this report, were:

(1) Would the experimental instruction result in fewer errors in the use of end marks?

(2) Would such instruction lead the students to improve their punctuation as a result of recognizing the junctures requiring commas in setting off modifiers (introductory elements, words in apposition, and nonidentifying modifiers) and in separating words or word groups in a series?

(3) Would the design of an objective test affect performance? That is, would the experimental group's expected improvement be revealed regardless of whether the students punctuated as they wrote from dictation or whether they punctuated a mimeographed copy of a selection which they must interpret as they heard read?

The results of the objective tests have a bearing on all three questions, but the study of students' original paragraphs concerns only question 2.

General Conclusions

General conclusions, based on the data analysis presented in Chapter IV, are as follows:

(1) Ninth-grade students who were subjects in this experiment were more proficient in the use of end marks than in the use of the comma, as indicated by the relatively few errors in end marks at all times of testing on all three types of tests.

The instruction described in this study did not result in significant improvement in the use of end marks.

(2) The instruction did result in significant improvement in the use of the comma in those functions covered in the experimental instruction; i.e., to separate items in a series and to set off non-identifying modifiers. The improvement in the latter use is important because it indicates that the subjects learned to recognize the "contrasting intonation patterns which signal differences in structure and differences in meaning"[1]—structure and meaning distinguishing identifying and non-identifying modifiers (including the restrictive and non-restrictive clauses of traditional grammar).

(3) The design difference in the objective tests did not affect punctuation behavior.

Variables Affecting Test Results

Three variables may account for the failure of the instruction to produce significant improvement in the use of end marks, while it did produce significant improvement in the use of commas. First, both groups had been given considerable instruction in the use of end marks prior to the experiment (without any hint of the relationship between end marks and intonation, however). Neither group had received recent instruction in the use of the comma, nor had comma errors been marked on themes throughout the year, as had other punctuation errors. Second, it may be true that students unconsciously reverse the process which in reading causes them to produce the sentence-final contours signaled by end marks, and by so doing supply end marks when they "hear" the cues. Third, the lessons in the experiment dealt at relatively greater length with the comma-intonation relationship; approximately one and one half hours instruction were devoted to the comma, and only one half hour to end marks. Controlling the first and third of these variables by providing the taped instruction early in the year and by providing more instruction in the use of end marks might result in greater differences in these errors. Finally, it is doubtful that the length of either the objective tests or of the writing sample (the first one hundred words of a 150-word paragraph at each time of writing) was adequate for measuring end mark errors before or improvement after the experiment. A better measure of student writing would have been a collection of perhaps five 100-word samples from each student before the experiment and five similar samples after the instruction.

---

[1] Paul Roberts, English Sentences (New York: Harcourt Brace & World, Inc., 1962), p. 181.

A special factor relating to the posttest written paragraphs might have had some bearing on the absence of significant differences between groups in comma omission errors, to be expected in view of the significant differences one month later on the retention tests. At the time of writing the posttest paragraphs, the teacher-researcher, pressed for grades, announced (to both groups) that the paragraphs would be graded. At the time of marking the paragraphs, the teacher noticed that the members of the control group seemed to have used fewer structures of modification—their sentences were generally simple in structure. An examination of the two comma categories for the two groups at the second time of writing (posttest) shows that both groups needed approximately the same number of commas to separate items in a series, but that the control group needed a total of 51 commas to set off modifiers, while the experimental group needed a total of 126 (see Table 6, page 33). It is possible that the cautious members of the control group aware of the teacher's tendency to place emphasis in grading on that aspect of writing currently being stressed felt that, when writing their posttest paragraphs, they would be less likely to make punctuation errors (and consequently earn a lower grade) if they avoided constructions requiring a choice between a comma or no comma.

Conclusions Resulting from Informal Analysis

The informal analysis of comma use errors (see Chapter IV, pp. 31-34) revealed that the experimental group made fewer errors in setting off nonidentifying modifiers after the experiment, and fewer errors on post- and retention tests than the control group, indicating that instruction based on intonation cues is helpful in developing children's ability to distinguish in writing the restrictive from the non-restrictive word groups. Such development is difficult to teach to ninth graders by traditional rules, which depend solely on meaning.

The following observations may be made as a result of the breakdown of comma errors on the paragraphs (see Table 7, page 34):

(1) The control group omitted fewer commas (of the total they needed) in setting off structures of modification on the posttest than on the pretest, but again omitted almost two-thirds of those needed on the retention test.

(2) The experimental group omitted almost the same percentage of commas to set off modifiers as the control group on the pretest, but considerably fewer on the posttest, and somewhat fewer on the retention test.

(3) Even though the experimental group failed on the retention test to provide as many of the commas needed to separate modifiers as they had on the posttest one month earlier, they provided fifty percent more of those needed on the retention test than they had on the pretest.

(4) The differences between groups did seem to indicate a trend in the experimental group toward an understanding of the use of the comma, both in its function to separate items in a series, and perhaps more important, in its function to separate sentence

modifiers. The latter improvement is important because it reflects the students' ability to punctuate solely by identifying intonation patterns rather than on the consciousness of grammatical constituents or syntax.

Implications for Further Research

Results of this experiment offer convincing evidence that students can learn to recognize the junctures ordinarily requiring commas in writing and punctuate accordingly. Further research might determine the effectiveness of taped-programed instruction in other areas of punctuation by broadening the scope of the lessons to include parentheses, brackets, paired dashes, the colon, and the hyphen in its function of linking components of a compound modifier.

The procedures used in this experiment might supplement those used by Anthony L. Tovatt, who with Ebert L. Miller conducted a research project designed to test the effectiveness of oral-aural-visual stimuli in improving student writing (see Chapter I, page 3). Professor Tovatt maintains that the writer hears what he writes; he based his experiment on the proposition that the student can profit from the "processes of multiple sensory stimulations"[2] resulting when he says aloud what he writes, taping as he writes, and then by playback, comparing what he has actually written to what he had taped. A student trained to recognize the intonation cues related to punctuation should logically be able to listen for those in addition as he proofreads.

Implications for the Classroom

Any new method of instruction must be considered in terms of its practical application in the classroom as well as its effectiveness in teaching. Teaching punctuation by the method discussed in this paper is practical in any classroom.[3] It requires less time than traditional methods—the taped lessons required some two hours and twenty-seven minutes; teaching the rules of punctuation by conventional methods takes several days. If the tapes were revised and refined, more areas of punctuation could be covered in the same time (elimination of the comma fault, for example). The only equipment absolutely necessary is one tape recorder and eight headphones. The method is adaptable; each student could be provided with headphones, enabling the entire class to hear the instruction simultaneously, or small groups or individual students could use the tape as necessary. Once completed, the taped lessons may be used indefinitely, even though new booklets must be provided for each student. The booklets may be mimeographed and are relatively inexpensive.

---

[2] The reference in Chapter I concerned Tovatt's pilot project conducted prior to the final study, which is discussed in detail in "The Sound of Writing," Research in the Teaching of English, I (Fall, 1967), 176-89.

The students here reported on enjoyed the experiment. They commented that the instruction seemed to be individualized;

---

[3] In view of the conditions under which this experiment was conducted, it is not possible to take this statement too literally. The classroom, of 1908 vintage, was equipped with desks fixed to the floor, preventing the setting up of a permanent listening center. The recorder was placed on top of one of the desks at the beginning of the experimental group's class period (the fifth), and removed at the end. The unexpected became commonplace. On the first day of the experiment during the introduction to Lesson One, members of the County Board of Education, inspecting the building, became intrigued with the octopus-like arrangement of recorder and headphones and came in for a visit. The teacher, frequently completing a lesson barely in time for its presentation, often misjudged the time required; consequently the second group of students sometimes finished a lesson after the bell had rung. They calmly read, listened, and punctuated as the teacher distributed slips bearing the message "Please excuse Johnny; he is participating in an experiment" and members of the sixth period class gathered in the doorway to observe with fascination. In other words, conditions were far from ideal, and if learning could take place under these conditions, such learning should take place in any classroom in the U.S.

that is, the teacher seemed to be talking to the individual student and to him alone.

Factors Affecting Classroom Research

Little research of this kind has been done in the English classroom. It is not difficult to see why: English teachers are trapped by too many students meeting too frequently to allow time for research. In addition the conscientious teacher, faced with the demands of teaching all the language arts skills, must weigh carefully the desirability of experimentation with its possibility of failure, and consequent wasted time, against conventional procedures which, though limited in success, have served generations of students. The fact is that unfortunately the institution of public education in the United States is extremely conservative. Innovation and experimentation are not always encouraged and may in fact be discouraged—by either lack of interest or outright disapproval.

Yet we must search for new ways to accomplish old objectives. "The methods used to teach English now differ little, if at all, from the methods in vogue at the turn of the century," observe the authors of "The Classroom Teacher as a Researcher" in a report compiled by the Committee of the National Conference on Research in English. "The teaching of English is in desperate need of the kind of research that is best done in the individual classroom . . . and only at the classroom teacher level do we possess the man-power and the facilities to do the vast amount of preliminary work necessary to effect any real improvement in the teaching of English."[4]

What research is done at the secondary level must somehow be worked into an already too full schedule, and conducted in an overcrowded classroom by a teacher with too much to do.

---

[4] Carlton M. Singleton, Paul B. Diederich, and Walter Hill, in Research Methods in the Language Arts (Champaign, Ill.: National Council of Teachers of English, n.d.), p. 38.

Yet these are the very conditions that will make the researcher's laboratory authentic, and consequently make his successes profitable for the English students across the hall and across the nation.

APPENDIX I[1]

THE STUDENT BOOKLET

Lesson One

1

The centaur is a legendary animal. It is half man, half horse. It has the head and shoulders of a man and the body and legs of a horse. At one time people believed that these animals actually existed.

2

The history of the alphabet is fascinating.at first, people drew little pictures which represented either things, ideas, or actions.we trace our twenty-six letters back to the Phoenicians, who were part of a larger group called the Semites.these people used symbols which represented their consonants plus any vowel sound.

3

The Phoenicians, who were traders, sailed their ships all over the Mediterranean world, and the Greek people adopted their symbols.however, the Greeks didn't need all the symbols for consonants because their language didn't contain as many as that of the Phoenicians.the intelligent Greeks used the extra symbols to represent vowel sounds.

4

a. In order to get the book I went early.
b. I wanted to get the book.I went early.

---

[1] In this and the following appendixes the exercises (including student booklet, supplementary exercises, and mimeographed tests) are reproduced as they were presented to the students, that is, without signaling capital letters and spaces for punctuation. Desired marks are inserted in red.

[In this duplicated copy, of course, the supplied punctuation will not be in a distinctive color]

5

a. We had left early.we were not late.
b. Since we had left early we were not late.

6

a. I thought the pencil was mine since nobody claimed it.
b. I thought that the pencil was mine.nobody claimed it.

7

a. While I was eating lunch I heard the fire alarm.
b. I was eating lunch.I heard the fire alarm.

8

a. Sweets can be fattening.I have learned to use saccharine in my tea.
b. Because sweets can be fattening I have learned to use saccharine in my tea.

9

a. The test was easy.
b. The test was easy?

10

a. You are going home?
b. You are going home.

11

a. This is mine.
b. This is mine?

12

a. I'm going to be late.
b. How cold it is!

13

a. I can't find my sweater.
b. What a shame!

14

a. There is a fire in the fireplace.
b. There is a fire in my neighborhood!

15

a. How tall those mountains are!
b. The mountains are extremely high.

16

a. That's not your book!
b. Where is your book?

17

a. It's raining?
b. It's raining.

18

a. That's a good picture.
b. That's a terrible picture!

19

a. The TV isn't working.
b. The lights are out!

20

a. That car ran over the puppy!
b. He wasn't touched.
c. How could that have happened?

21

a. Punctuation by intonation is not as easy as it sounds.
b. Look at that boy run!
c. Is the puppy his?

22

a. This is an exciting game!
b. Our team lost.
c. The score was 12-6?

23

It is eighty miles from Lawrenceburg to Nashville.the drive is always a pleasant one because Middle Tennessee is so beautiful.cattle graze peacefully in rolling grassy meadows.the highway forms gentle curves through the low hills.I never tire of making this trip.what a beautiful state Tennessee is!

24

What a storm!I have never witnessed such wind.when?yesterday. I saw trees breaking under the force of the wind.the rain whipped against the windows in angry torrents.the sky was a dull leaden gray,the wind roared menacingly.it never let up. lightning flashed occasionally turning the gray clouds into a sickly yellow.I hope I never witness such a storm again!

25

I couldn't decide why everything was going wrong that day. for one thing I had a headache when I woke up because I had read too late the night before.for another I had turned off my alarm and gone back to sleep.I had slept soundly until I felt Mom shaking my shoulder: "I've called you three times; now get up!" she said.then when I got to school I found that I had left my English homework on my desk at home.my teacher would never believe that I had gotten it.I couldn't imagine what I had done to deserve such luck,I looked at the calendar. it was Friday the 13th!

Lesson Two

Review Frame:

a. Stop that!
b. You're walking?
c. I see that spring is not going to be as early as I thought.

26

a. It's ten o'clock already!
b. I took sandwiches and potato chips to the picnic.
c. You are not going?

27

a. She is your little sister?
b. She's pretty!
c. I saw her with you; I thought she way your sister.

28

a. The town, when I returned, had changed; it was no longer the sleepy small southern town in which I grew up.
b. Surprisingly, the game was a close one; at the half the teams were tied.
c. Lawrence County is located in Middle Tennessee; it is approximately half way between Memphis and Chattanooga.

29

The kitten looked hungry;I offered it some food.

30

The house was dark;the Browns were not at home.

31

We all grew impatient;it was time for the movie to begin.

32

In the summer I like to sit out in the yard;I think about the millions of stars in the sky and wonder if there is indeed life on other planets.if so, the unidentified flying objects may come from outer space.

33

Newspapers and magazines are full of articles about air and water pollution.recently I heard a radio program on the pollution of the great lakes;at present Lake Erie is not suitable for swimming because of the wastes dumped into it.

34

I got up too late to eat breakfast. However, I did drink a glass of milk.

35

I got up too late to eat breakfast; however, I did drink a glass of milk.

36

The boy had not been in a school play before;consequently, he was extremely nervous.

37

The door was open;however, the building appeared to be deserted.

38

The day drew to a close;finally it was time to head for the school bus and home.

39

Editors and publishers of books are the ones who determine correct punctuation;therefore we should notice how these articles use the marks of punctuation.

40

I looked out the window. However, it was raining so hard that I could hardly see the house across the street.

41

We searched the entire neighborhood for the lost puppy;also we went across the highway and asked several people there if they had seen him.

42

We were undecided as to what we should do;finally we decided to call "Swap and Shop" and see if we could find our lost dog by radio.

43

Next morning we dialed the radio station;however,the line was busy.we had to try three times before we got the line.

44

We waited impatiently.we were concerned about our puppy;moreover,it was time to go to school.finally we got the line and completed the call.

45

At 7:38 the phone rang.the puppy was found!consequently, we were able to go on to school knowing that he was safe.

[End of first session]

46

As for me, I'm going to stay home and relax.

47

a. To be sure, it is not always easy to tell the truth and at the same time to be polite.
b. Far from done, she began to be discouraged with her project.
c. His homework finished, he began reading Street Rod.

48

a. In a moment the meteor was gone.
b. In a moment it will be 1967.

49

a. On the other hand, I could not be sure that I had brought the books home.
b. On the other hand is a scar caused by a burn.

50

a. By studying, we can learn facts that will stay with us a lifetime.

51

a. Heading for the new building were all the students from bus 16.
b. Heading for the new building, we saw Mary and Sue and stopped for a brief "hello."

52

a. As you can see, punctuation can be easy.
b. Before leaving, Nancy checked to see that she had the money.
c. Before leaving Nancy, I told her again where to meet me.

53

a. Suddenly it was pouring rain.
b. Suddenly, the rain began to fall in torrents.

54

a. After I had watched TV for thirty minutes, I began to grow sleepy.
b. After all it was past my bedtime.

55

Because of the snow, we were out of school three days.

56

Since we were planning to come to the ball game, we ate supper early, dressed quickly, and left home at 6:45.

57

a. I noticed Faye watching, Martha singing, and Judy humming.
b. I noticed Faye watching Martha singing, and Judy humming.

58

a. For breakfast I had an egg, toast and jelly.
b. She wore a white sweater, a blue skirt, and blue stockings.

59

a. Because the weather was going to be rough, I decided to wear a sweater, a coat, my wool cap, and gloves.

60

Last summer my family and I decided to visit The Hermitage, home of Andrew Jackson in Nashville.as luck would have it, the skies clouded over just as we arrived;however, our spirits were not too dampened.we were looking forward to seeing this historic home.as we approached the location we could see the white brick home with its tall white columns reaching two stories to support the roof of the porch.suddenly it began to rain.after waiting several minutes for the rain to slack, we decided to get out of the car.running over the brick walk, we reached the ticket office.after we had bought our tickets, we made our way to the carriage house.inside was Andrew Jackson's big black carriage.completely fascinated, we examined it inside and out.of course we were not allowed to climb inside the carriage but we could look inside.the rain having stopped, we followed the brick walk to the house and went into the wide front hall.because of velvet ropes suspended across the doors, we could not enter the dining room or the parlor.however we could stand in the doorway and see the lovely old rooms with their high ceilings, elaborately carved woodwork, and beautiful period furniture.feeling as if we had stepped into the past, we climbed the wide stairs, paused at the landing to examine the curved balusters, and then went on to look at the bedrooms. like the downstairs rooms, the bedrooms had tall ceilings, carpeted floors, and papered walls. the whole house spoke of elegant living in a manner belonging to the past. only eighty miles from home, the Hermitage offers a Lawrence County family a pleasant outing.

Lesson Three

61

First, second, third. Fourth, fifth, sixth. Seventh, eighth, ninth.

62

Many Alabama towns have Indian names. some of these are Wetumpka, Tallassee, Tuskegee, Opelika, and Sylacauga. others are Talladega, Tuscaloosa, Letohatchee, and Wedowee.

63

a. Before long we will begin to see that the days are getting longer.
b. Before working on an electrical appliance, you should unplug it.

64

a. Walking through the narrow door with a big package was difficult.
b. Walking through the narrow door, Susan dropped the package.

65

We arrived late; however, we didn't miss anything important.

66

A word can mean different things to different people; consequently we often misunderstand each other.

67

Mary was a popular girl; she was chosen Queen of Hearts.

68

a. I lost my watch last week. It was a Bulova, and was given to me for my birthday.
b. The Ford Mustang is a popular car; its sales ranked among the highest in the auto industry in 1966.

69

a. Fingernails are horny outgrowths of the skin;they grow at the rate of approximately 1/8 inch a month.
b. The liver is an important organ.the skin, too, is an organ but of course is quite different.

70

a. Like the heart, the liver is an important body organ.
b. The liver, like the heart, is an important body organ.

71

a. My father,who is a man of great honesty,taught me to tell the truth.
b. My father,a man of great honesty,taught me to tell the truth.
c. My father,honest and dependable,taught me to tell the truth.

72

a. The girls in white are our cheerleaders.
b. The girls, in white, are our cheerleaders.

73

a. The students who are failing are trying to pull up their grades.
b. The students,who are failing,are trying to pull up their grades.

74

a. The boys,standing in the hall,are seniors.
b. The boys standing in the hall are seniors.

75

a. My cousin,who lives in Birmingham,is coming up for a weekend.
b. My cousin who lives in Birmingham is coming up for a weekend.

76

a. The roses which have blight will be ruined.
b. The roses, which have blight, will be ruined.

77

The philosopher Diogenes, who searched for an honest man, lived more than 2000 years ago.

78

He was a man who was not easily discouraged, but he never found an honest man.

79

The discovery of radium, to be sure, was one of the most important discoveries of modern times.

80

We find that to be sure of ourselves is important to our happiness.

81

My faith in my own opinions is not always strong enough to enable me to express myself comfortably.

82

My faith, in my opinion, is one of the things that enables me to face my problems.

83

The child, his candy gone, began to cry for more.

84

The speaker, the Mayor of Lawrenceburg, was given enthusiastic applause.

85

a. We waited, because it was cold inside the building.
b. We waited because we couldn't do anything else.

86

I was hesitant,however,to say anything about the incident.

87

The team,after losing the first game,won the second easily.

88

a. The boys,under their coaches' guidance,continued to win throughout the season.
b. The Little League boys under Coach Jones beat those under Coach Braddock.

89

a. The little boy,looking for his cowboy hat,found it under the bed.
b. The little boy looking for his mother was unhappy when he could not find her.

90

Jim and Bob,their homework done,decided to go over to a friend's house for a while.on their way they ran into Pat, Bob's cousin,who was also a friend of Jim's.he too,was ready to relax for a while,and upon being invited,joined the other two boys.when they reached the Parker's house on Howard Street, they knocked on the front door.Mrs. Parker,a smiling woman, opened the door and invited them in.their friend Martin was as usual parked in front of the TV set.Martin,watching his favorite program,was not to be disturbed even if he did have visitors.Jim,Bob,and Pat therefore were treated to the last half of a western.it was,unfortunately,one that they had already seen.

Lesson Four

91

A pair of bluejays have built a nest in a maple tree in our back yard.they are anxiously awaiting the hatching of the eggs.

92

What a remarkable structure the skeleton is!it provides support for the muscles and organs of the body,but it is hinged so that the body is quite flexible.

93

a. Do you smell something?
b. I smell smoke!
c. The socks that I hung in front of the heater to dry are scorching!

94

Parliamentary Procedure is a system of orderly conduct for club meetings.it requires that a member stand and be recognized by the presiding officer before making his motion.it insures each member the opportunity to be heard;moreover,it prevents one person from making all the decisions.

95

a. The United Nations,which was established shortly after Truman became president,has survived for over twenty years in spite of great odds.
b. An institution which has survived for twenty years in spite of great odds is the United Nations.

96

After studying under Plato for twenty years,the Greek philosopher Aristotle became a teacher of great fame.eventually he was summoned by King Phillip of Macedonia to teach his son Alexander,who was to be known through the ages as Alexander the Great.

97

Archaeologists have uncovered a vast amount of knowledge of early man.civilization,thought to have begun in the valley of the Nile and in the land between the Tigris and Euphrates rivers,slowly spread into the countries surrounding the Mediterranean Sea.

98

Early man,who was ape-like in appearance,was superior to other animals in several ways.he had vocal cords capable of making a wide range of sounds,a flexible thumb that could touch each finger,the ability to stand erect,and the ability to learn.

99

Early man,of course,made countless important discoveries that helped him in his long struggle toward civilization. at some point in the distant past he discovered the possibilities of man-controlled fire.finding it necessary to defend himself,he learned to pick up sharp stones and hurl them at wild animals.later he learned to form stones into knives,arrows,and spears.we can only marvel at the genius of long ago who thought of the wheel,surely one of man's greatest inventions.we can assume too that man was guided in these discoveries by a higher being.

100

How welcome are the first signs of spring!the air has an unmistakable warmth that announces the news.the sun,shining brightly in a cloudless sky,rises earlier each morning and sets later each evening.if we look closely,we see the tiny buds appearing on some varieties of shrubs and trees.listening, we hear the sounds of spring.the birds are back and are singing and chattering outside the window.girls in short-sleeved dresses,boys in lightweight yellow and burgundy jackets,and women in cotton dresses tell us that heavy winter clothing is out of season.could any news be more welcome?

APPENDIX II

SUPPLEMENTARY EXERCISES

End Marks

In 1690 the school children of the colonies studied The *Hornbook*, the religious *Primer*, the *Testament*, the *Psalter*, and the *Bible*. early instruction began with the *Hornbook*. it was not really a book at all but was a printed leaf pasted onto a thin board. a clear sheet of horn covered the printed leaf in order to protect it from dirty fingers. the *Hornbook* was followed by a primer. after the child had mastered these two "books" he was instructed in the catechism, which was used in all Protestant lands. in the American Colonies the *Westminster Catechism* was used. it consisted of a series of questions to which the child learned the answers. the first question of the *Westminster Catechism* was "What is the chief end of man?" the child was expected to answer: "man's chief end is to glorify God and enjoy him forever." the schools of colonial America were church schools and were expected to teach the child the important aspects of the Christian Faith.

End Marks and Commas

The children of colonial America were given heavy doses of religious instruction in their church-related schools. the *New England Primer* contained exercises of a religious nature. as the child advanced in reading ability he was introduced to the *Psalter*, the *Testament*, and the *Bible*.

However other subjects were not entirely neglected. for example Dilworth's *Guide to the English Tongue* contained rules of grammar, fables, and prayers. his *Schoolmaster's Assistant* was used as an arithmetic text.

The colonial school was not a good one.lack of proper materials, poor teaching methods, and lack of liberal attitudes made the colonial school inefficient as compared to modern schools.in addition, the schoolhouses were crude.there were no blackboards, maps, globes, or charts.paper was expensive; therefore it was not widely used.pencils and pens were unheard of.homemade materials included goose-quill pens, homemade ink, and birch bark for ciphering or writing.because teachers were not well trained, time was wasted and instruction was poor.also, discipline was a problem.frequently, the switch and whipping post were used to keep order.after 1790, changes were made in the schools: religion was de-emphasized, more subjects were offered, the elementary school became common, and in the middle colonies the secondary school was developed.in the course of time these early schools developed into the modern schools of today.

End Marks and Commas

Admitted as a state in 1796, Tennessee waited thirty-four years before laws were passed which established the district system of schools.at Governor Johnson's urging the Tennessee Legislature of 1854 levied taxes for school support.however, the Civil War ended educational progress until 1873.

For several reasons the South was slower in improving education than the North.first, the South was agricultural.the people did not live close together in small towns but lived on farms.in fact, there were few large cities in the South. second, there were few wealthy families in the South but many of the moderate or low incomes.the wealthy families could afford private schools or private tutors.also, this class owned most of the land and was opposed to taxing the land to support public schools.third, many people felt that public education would do away with differences between classes that members of the upper classes thought to be desirable.too, it was felt that education was the responsibility of the church rather than the state. finally, public education was considered by many to be highly impractical. as is often true today those most in need of education were often least interested in it.

As the years passed, schools in Tennessee began to improve. the one-room schoolhouse was a familiar sight over the country-side in the nineteen thirties. even though these schools were hot in summer and cold in winter, boys and girls learned to read, to spell, to add, and to write.

During the last twenty years, these small schools have been abandoned in favor of larger consolidated schools. the big yellow school bus is a familiar sight on Tennessee roads and highways in the mornings and afternoons from September to June. because of better facilities in these modern consolidated schools, most parents are happy to see their children board a bus and head for town. moreover, the boys and girls themselves enjoy the comfort of the modern building, the benefits of a variety of subjects, and the excitement of following the athletic events. education in Tennessee is looking up.

End Marks and Commas

1. My brother, whistling a tune, walked down the street.
2. On Saturday mornings Al rides to the store, which is two blocks away, on his bike.
3. Susan, running into the house, fell on her face.
4. The boy poking around the ruins is Herbert.
5. The boy, poking around the ruins, found a skull.
6. It is, I believe, almost time to plant a garden.
7. The sailor who was on lookout reported seeing a submarine.
8. The skipper, who was on the bridge, studied the weather.
9. The men who were working on the bridge held up traffic for ten minutes.
10. John, hurt by the explosion, was sent to the hospital.
11. The man who was hurt was a friend of mine.
12. The girl working on her lessons is Sara Adams.
13. The dogwood, a tree of great beauty, blooms in the early spring.

14. The boys, having scrimmaged in the hot sun, were exhausted.

15. It is easy to see that high school graduates, whose incomes are higher than those of nongraduates, have gained a lot by staying in school.

[Dictated to students:]

1. The boy who is working on his math is Bobby.
2. Marion, who knew all about it, smiled quietly.
3. Nancy, surprised at the question, shook her head.
4. The note written by my mother was left at home.
5. The kitten whose tail is tipped in white meowed piteously.

APPENDIX III [1]

THE TESTS

Dictated Tests

Pretest

1. When we were trying to decide where to go on a vacation, we thought of the Smokies, Texas, and Florida.
2. We knew, however, that motels in these places were expensive. Therefore, we decided to tent-camp.
3. Pouring over our maps, we found that a state park which was located in south Alabama was only a day's drive from home. This, we decided, was where we wanted to go.
4. The decision made, we began to get ready by checking our camping equipment, buying a few new items, and packing everything in a trailer which we borrowed from a friend.
5. We decided to leave early. Therefore, at 3 o'clock in the morning we left our neighbors, who were all sleeping soundly, and headed south.
6. Gulf State Park, crowded with tent-campers, was located between the gulf and a fresh water lake. In fact, it was perfect.
7. The park superintendent, who was in a tiny building near the park entrance, directed us to campsite 7, a spot near the edge of the lake.
8. Finally we were able to unload our gear, set up the equipment, and cook supper, which turned out to be a delicious meal.
9. We sat out under the stars after washing the dishes. How nice it was to actually be on vacation! Soon we went to bed but were unable to sleep because the people next door, a noisy group, were up until twelve o'clock.

---

[1] In order to provide an adequate measure for comma omission errors, all tests required more commas than would be appropriate in good writing.

Posttest

1. When we first began to think about this summer's vacation, we couldn't decide whether to head east, south, or north.
2. We knew, moreover, that time would be limited. Therefore, we decided to go to the east coast.
3. Looking at a map of the eastern states, we found that a state park which allowed tent-camping was located near Albermarle, North Carolina. This, we decided, had possibilities.
4. This decision made, we began to plan our route, consider the time to leave home, and think about other points of interest which might be along the route.
5. We decided to go on to Myrtle Beach. Moreover, we felt that we should visit the city of Charleston, which is noted for its beautiful homes, and other historic sites along the coast.
6. Lake Arrowhead, nestled between a forest and the sea, is not as expensive as you might think. In fact, the fee is quite low.
7. Bob Jones, who has camped there several times with his family, tells us that they always enjoy Arrowhead.
8. Soon we will pack our bags, load the trailer, and set the alarm for 3 A.M., which should be early enough.
9. It's always fun to plan a vacation. How good it will be just to get away for a while! Actually the best part of a vacation, the coming home, occurs at its very end.

Retention Test

1. When the month of May arrives each year, we begin to think of the end of school, of final tests, and of summer vacation.
2. We know, however, that there is much to be done before the end of school. Therefore, we make up our minds to really get to work in order to pull up our grades.
3. Pouring over our books, we make sure that those lessons which have been assigned are well done. This, we hope,

will help make our grades higher.

4. Pre-registration coming up, we ask for advice from our parents, some of our teachers, and those students who are taking some of the courses we are interested in.
5. We finally work out our schedules for our sophomore year. Therefore, we have time to think of the summer vacation, which will last from June until August, and of what we will be doing then.
6. Summertime jobs, scarce for teenagers, are what we hope for. However, we do not plan to spend all our time working.
7. Teenagers, who usually enjoy many outdoor activities during the summer, will be taking part in water sports, the most popular summer activity.
8. Soon we will be able to relax in a pool or swimming hole, go boating and skiing, or spend hours quietly fishing, which is hard to beat.
9. We can hardly wait for summer. What a relief it will be to leave teachers and books for a while! After a few weeks we will be ready for that big day, August 17th, when school will open for another year.

Mimeographed Tests

Pretest

What sport do you enjoy watching?basketball, my favorite spectator sport, is a rough, fast, exciting game played indoors where the onlookers can be comfortable.it affords an evening's entertainment complete with pre-game band concert, a bevy of pretty gyrating cheerleaders, and most important of all, a hard fought contest between teams which have been carefully coached in the arts of offensive and defensive play.

Recently I attended a game that was, I thought, especially entertaining.playing before a crowd, I feel sure, numbering in the hundreds, our girls' team showed great skill in capturing the ball, hurling it to teammates, and retrieving it from the backboard.in addition, they were able to sink the ball into the basket often enough to win the game.

The girls, who always appear first on the agenda, were trim little fighters who in this game were almost unfeminine in their determination to win.once Beth White, in an attempt to wrest the ball from her opponent, unintentionally, I am sure, stepped on the other girl's foot and was quite indignant when the referee shouted "foul!" in the last quarter of the game, several girls had had the maximum number of fouls called on them; however, each managed to avoid that final one which would have removed her from the game.

Girls' basketball is not always looked upon with favor. consequently, Tennessee is one of the few states allowing it. some doctors and many parents feel that it is too rough, too emotionally upsetting, and too physically exhausting for girls. Alabama high schools, which do not have girls' basketball, offer their girls physical education that does not involve intermural sports.those favoring the game feel that it is good for the girls and that it provides school spirit, which is certainly desirable, as well as community entertainment.most people will agree that something important would be missing from the hometown athletic scene without it.

Posttest

Have you ever stopped to think of the recreational opportunities offered by the Tennessee River?located in northern Alabama near Tennessee's line, this river provides fun and relaxation for anyone who wishes to take advantage of its facilities.

During the summer, which lasts from May until October, Lawrence Countians, like flocks of geese, head for the water, play in the water, and live in the water.the lucky people who have cabins on the river spend their summer weekends there swimming, boating, and most important of all, entertaining envious friends who are not so lucky.

On the other hand, it is not necessary to own a cabin or have a friend who owns one in order to enjoy the river.half the families in Lawrence County, I feel sure, own boats.pulled behind automobiles, these boats are taken to public docks located on the river.on Sundays boaters flock to the Second Creek dock, leave their automobiles parked there, and enjoy an afternoon of fun on the water.

Fishing, which is another important recreational activity provided by the Tennessee River, is also a popular pastime among river visitors.fishermen, who avoid the water skiers and boatmen, can be seen below the dams unless the spillways are open.these waters, incidentally, can be dangerous.they are usually full of fish; consequently, they are also full of fishing boats.at times the boats are so close together that it seems as if there could not be enough fish to go around.

And for those who do not like to fish, are terrified of a boat, and cannot bear to be in water over ankle deep, there is the beauty of the river to enjoy.it is always, to me, calm and restful in spite of the wake created by boats and skiers. the temperature, which can soar to 100 degrees in Tennessee and North Alabama, is made more bearable by the breeze always stirring in the trees on the banks.

How lucky we are to have this river at our doorstep! it is ours to enjoy—nature's gift to Lawrence Countians.

Retention Test

Have you heard anyone say lately that Lawrence County is changing?progressive in many ways, Lawrence County is a good example of industry's effect on a rural area.

In the last ten years, which have been prosperous ones, Lawrence Countians, like their big city cousins, have come to enjoy modern home conveniences, new recreational activities, and most important of all, job opportunities which are right here at home.a Lawrence County farmer can live on a farm, work in a plant, and enjoy the advantages of of farm life along with a steady income.

As a matter of fact, conditions have not always been thus in Lawrence County. fifteen years ago, as I remember, an eighteen-year-old farm boy found it hard to get a good job here. graduating from high school, he could stay on the farm, join the marines, or leave home in search of work.

Industry, which is increasingly looking South for new locations, came to Lawrence County some ten years ago. Murray Ohio, the largest bicycle manufacturing plant in the world, came here from Ohio. Union Carbide, of course, soon followed. jobs became available; therefore, young men found job openings. now it was not necessary to leave home in order to go to work.

Because of new brick homes along country roads, shiny new cars in driveways, and well dressed youngsters in the schoolrooms, we know that we live in a prosperous county. these signs are to me important because they represent security. our happiness, which does not depend on new houses and new cars, is without doubt related to the opportunities we have to provide a good living for ourselves and our families.

How lucky we are to enjoy the advantages provided us! let us hope that Lawrence County contimues to change—and always for the better.

Model Paragraphs

Organs of Speech

The organs of speech are divided into three main parts. The first of these, called the nasal cavity, serves to amplify sound, making it louder. The second division, the oral cavity, consists of upper and lower areas. The upper part contains the upper lip, teeth, alveolar ridge, palate, velum, and uvula, which resembles a punching bag. The lower area contains the lower lip, teeth, and the tongue. The tongue consists of four parts, which are the apex, which includes the tip and blade, the front, dorsum, and root. The third division consists of the epiglottis and larynx. The larynx consists of the vocal bands and the glottis. Because they enable us to communicate with other people, the speech organs are very important to us.

The Skeleton of the Hand

The skeleton of the hand is a remarkable structure. It has three main parts. First, there is the carpus, which we call the wrist. It is made up of several small bones, which resemble closely-packed pebbles. These bones are quite flexible, enabling us to move our hands freely. The second of the three divisions, the metacarpus, consists of five long bones which appear to be extensions of the fingers. The third part, the phalanges, consists of the thumb, first finger, second finger, ring finger, and little finger. The phalanges, which are very similar to the toes, are extremely useful. They enable us to perform many actions that the lower animals cannot do.

The Skeleton of the Foot

Like the skeleton of the hand, the skeleton of the foot shows three major divisions. The first, made up of seven irregularly shaped bones including the heel, or os calsis, is called the tarsus. Like the bones of the carpus, these bones are flexible, enabling us to move our feet freely. The second division, the metatarpus, consists of five long slender bones similar to the metacarpus of the hand. Finally, there are the phalanges, which are made up of five toes. The toes include the great toe, or hallux, the second toe, the third toe, the fourth toe, and the fifth toe. The toes, like the fingers, are made up of jointed bones, but are not as flexible as the four fingers, which can move so as to touch the thumb. The bones of the human foot, fashioned by nature to support the body, are truly remarkable.

APPENDIX IV

RAW SCORES

Dictated Tests

Experimental Group

Subject	Stop Omission			Stop Commission			Stops Needed			Comma Omission			Comma Commission			Commas Needed		
	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3
1.			2	3	4	3	15	15	15	12	4	4				26	26	26
2.	2	3	2				15	15	15	3	1	2	5			26	26	26
3.	1	1	1		1	1	15	15	15	6	2	1	6			26	26	26
4.		2		3			15	15	15	5	1	2	3		2	26	26	26
5.	1				1		15	15	15	12	6		3			26	26	26
6.	1	2		5	3	2	15	15	15	9	2		1			26	26	26
7.	1	2	4				15	15	15	8	1	4	3		2	26	26	26
8.	1						15	15	15	5			5	1		26	26	26
9.		1		5			15	15	15	12	2			1		26	26	26
10.	2	1			1	2	15	15	15	9	2	5	1			26	26	26
11.	2						15	15	15	10						26	26	26
12.	1						15	15	15	2			2			26	26	26
13.	2	1	2	2	1		15	15	15	12	6	4	4		1	26	26	26
14.	4	1	1	1	1	1	15	15	15	5	1	2	5		1	26	26	26
15.	1			1			15	15	15	1	1		5			26	26	26
16.							15	15	15	7	2	1	3	2		26	26	26
17.			1	2			15	15	15	14	5	4	1	1	1	26	26	26
18.	2			2		1	15	15	15	17	4	7	1	1		26	26	26
19.	2	1		3	2	1	15	15	15	11	4	2	1		1	26	26	26

Key: C_1 = Pretest
C_2 = Posttest
C_3 = Retention Test

Dictated Tests

Control Group

Subject	Stop Omission			Stop Commission			Stops Needed			Comma Omission			Comma Commission			Commas Needed		
	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3
1.	2						15	15	15		2		4	4	3	26	26	26
2.	2	2					15	15	15	15	18	16				26	26	26
3.	5						15	15	15	3	2	2	5	3		26	26	26
4.	7	6	7		1		15	15	15	9	9	9	2		5	26	26	26
5.	1	3	3	1			15	15	15	11	16	16			2	26	26	26
6.			1				15	15	15	6	19	11	5		1	26	26	26
7.	1	3	1	2			15	15	15	14	16	18			1	26	26	26
8.	3						15	15	15	4	6	1	7	2	1	26	26	26
9.		1		2	2	1	15	15	15	6	7	7	2		5	26	26	26
10.	3	3	1	1			15	15	15	20	17	20				26	26	26
11.		1	1		1		15	15	15	10	3	5	3	3		26	26	26
12.	6	8	4				15	15	15	7	10	2	6	2		26	26	26
13.		2	2	2			15	15	15	13	16	12	1			26	26	26
14.	2	5	5				15	15	15	16	14	18				26	26	26
15.	1	1				1	15	15	15	6	9	7	1			26	26	26
16.	1						15	15	15	3	5		3	3	3	26	26	26
17.	1	1		3	4	4	15	15	15	14	15	14	1			26	26	26
18.	1	3	2	2	1	2	15	15	15	11	14	19	4			26	26	26
19.	2	2	5				15	15	15	7	9	7	5	3	2	26	26	26

Mimeographed Tests

Experimental Group

Subject	Stop Omission			Stop Commission			Stops Needed			Comma Omission			Comma Commission			Commas Needed		
	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3
1.	2		2	2			16	18	17	26	2	2	1		2	30	30	30
2.	3						16	18	17	7			7		1	30	30	30
3.		1		2			16	18	17	14	2		5		1	30	30	30
4.	1			2		1	16	18	17	12	4	1	4			30	30	30
5.	1		1	3			16	18	17	12	1				1	30	30	30
6.	1		1		1		16	18	17	15	2		3	1	1	30	30	30
7.	2		1				16	18	17	11	3	4			1	30	30	30
8.	1			1			16	18	17	8			3			30	30	30
9.	1			1			16	18	17	21					1	30	30	30
10.	1			1	1	3	16	18	17	14		1	3			30	30	30
11.	2						16	18	17	2			1			30	30	30
12.	1			1			16	18	17	8			2		1	30	30	30
13.	1			1			16	18	17	19	3	3			1	30	30	30
14.					1	1	16	18	17	30	3	1				30	30	30
15.							16	18	17	2	2		5			30	30	30
16.	1						16	18	17	11			1		2	30	30	30
17.	3	1	1	8	1		16	18	17	28	2	2	1	1		30	30	30
18.			1	2	1	1	16	18	17	21	7	3	2	1		30	30	30
19.	2			3		1	16	18	17	21	3		1			30	30	30

Mimeographed Tests

Control Group

Subject	Stop Omission			Stop Commission			Stops Needed			Comma Omission			Comma Commission			Commas Needed		
	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3	C_1	C_2	C_3
1.	1		1				16	18	17	5	4	1	1	4	3	30	30	30
2.		3	1				16	18	17	23	21	16				30	30	30
3.					1	3	16	18	17	6	4	2	1	2		30	30	30
4.		1	2	4	1		16	18	17	19	12	11		8		30	30	30
5.			1	1			16	18	17	12	15	12	1			30	30	30
6.	1	1	1	1			16	18	17	27	12	16	1	2	1	30	30	30
7.	1	3	2	3	1		16	18	17	18	21	21	1			30	30	30
8.				1			16	18	17	4	8	3	1	1		30	30	30
9.				1			16	18	17	18	12	7	1	4	2	30	30	30
10.	1	1	1			1	16	18	17	28	23	20	1	3		30	30	30
11.		1	3				16	18	17	15	7	6		1		30	30	30
12.	2	6	4				16	18	17	14	4	3	1	3	2	30	30	30
13.	2	2	2	4	1		16	18	17	20	20	16	1			30	30	30
14.	2	3	3	2			16	18	17	24	17	18	2			30	30	30
15.			2	1			16	18	17	17	10	8	1			30	30	30
16.		1	1				16	18	17	23	6	2		3	3	30	30	30
17.	1	1	1	6	5	5	16	18	17	13	18	18	4	1	2	30	30	30
18.	1		2	4	1	1	16	18	17	18	15	16	3			30	30	30
19.	4	4	5				16	18	17	21	17	15	2	2	3	30	30	30

Paragraphs

Experimental Group

Subject	Pretest			Posttest			Retention Test		
	Comma Omission	Commas Needed	Percentage Omitted	Comma Omission	Commas Needed	Percentage Omitted	Comma Omission	Commas Needed	Percentage Omitted
	C_1	C_1	C_1	C_2	C_2	C_2	C_3	C_3	C_3
1.	7	13	54%	1	10	10%	2	10	20%
2.	7	10	70		6			2	
3.	7	16	44		12		5	8	62
4.	6	21	28	1	7	14	2	7	28
5.	1	17	6		15		1	8	12
6.	4	14	28	3	8	38	7	15	47
7.	8	18	44		15		4	10	40
8.	2	17	12	1	10	10	1	9	11
9.	2	14	14	3	15	20		7	
10.	3	13	23		6		1	13	8
11.	4	17	24	2	6	33		10	
12.	1	11	9		7		1	8	12
13.	3	12	25		5		1	6	17
14.	7	13	54		10		2	11	18
15.	1	14	7	3	10	30	1	12	8
16.	4	19	21		11			6	
17.	7	19	37	6	14	43	4	9	44
18.	4	14	28	1	3	33	5	10	50
19.	9	17	53	3	10	30	1	8	12

Paragraphs

Control Group

Subject	Pretest			Posttest			Retention Test		
	Comma Omission	Commas Needed	Percentage Omitted	Comma Omission	Commas Needed	Percentage Omitted	Comma Omission	Commas Needed	Percentage Omitted
	C_1	C_1	C_1	C_2	C_2	C_2	C_3	C_3	C_3
1.	3	11	27%		3	%	2	10	20%
2.	5	13	38	6	8	75	3	5	60
3.	3	14	21	3	7	43	4	8	50
4.		12		2	6	33	5	8	62
5.	5	13	38		3		3	4	75
6.	8	14	57	4	10	40	4	6	67
7.	6	12	50				2	2	100
8.		9					3	7	43
9	3	10	30		4		11	14	78
10.	5	9	56	2	7	28	5	8	62
11.	2	10		1	7	14	1	4	25
12.		12		1	6	17	4	13	31
13.	4	8	50	5	8	62	5	6	83
14.	6	12	50	6	7	86	9	11	82
15.	2	14	14	4	9	44	3	7	43
16.	1	15	7		6		3	5	60
17.	4	19	21		3		4	8	50
18.	2	15	13	4	10	40	8	11	73
19.	4	14	28	1	5	20	5	7	71

APPENDIX V

SAMPLES OF STUDENT WRITING[1]

Experimental Group

Pretest

The speech organs consist of three parts which are the nasel cavity, oral cavity, and pharyngeal cavity. The nasel cavity amplifies speech has no other main parts. The oral cavity consists of the upper part and the lower part. The upper part is made up of the upper lip, teeth, alveolar ridge, palate, and uvula while the lower part consists of lower lip, teeth, and tongue which is made up on the apex consisting of tip and blade, front, dorsum and root. The pharyngeal cavity consists of epiglottis and larynx which consists of vocal bands and glottis. These are the three main speech organs and their parts.

Posttest

The skeleton of the hand consists of three main parts, which are the carpus, metacarpus, and the phalanges. The carpus, or the wrist, is moveable and allows the hand to move freely. The metacarpus, which is not moveable, consists of five bones, four fingers and a thumb. The phalanges, which is made up of the four fingers and the thumb, is the most important part of the human hand. This consists of the index finger, the second finger, ring finger, little finger, and the thumb. The hand, which is one of the most important parts of the human body, consists of these and other things.

---

[1] The three samples from each group are exact copies of paragraphs written by the same student at each time of testing. The two subjects whose paragraphs are shown here were selected on the basis of proximity to the median score on Stanford Achievement Tests.

Retention Test

The skeleton of the foot is much like the skeleton of the hand, but it is very much different in it's use. The tarsus is much like the carpus of the hand. In the Tarsus we have seven bones including the oscalsis or heel bone. Next we have the metatarsus which is much like the metacarpus of the hand. The metatarsus is made up of five slender bones. Last we have the phalanges that is made up of five toes, the great toe, the second toe, third toe, fourth toe, and fifth toe. Without the foot we could not walk, run, or be in any athletic activities.

Control Group

Pretest

The organs of speech consist of three main parts. One of the three main parts is the nasal cavity. The nasal cavity amplifies the sound which makes it louder and sound much better. The second part of the speech organs is the oral cavity which contains the upper area and the lower area. The upper area consists of the upper lip, teeth, alveolar ridge, palate, veluum, and the uvula. The lower area containes the lower lip teeth and the tongue. The tongue consists of four parts; the appex, front, dorsum and the root. The appex consists of two parts called the tip and the blade. The third part of the speech organs is the Pharyngeal cavity. The pharyngeal cabity is divided into two parts which are the epiglottis and the larynx. The larynx consists of the vocal bands and the glottis. These are the three main parts and their parts which make up the organs of speech.

Posttest

The skeleton of the hand is an unusual structure. It is made up of three parts. The Carpus is your wristbone.

It is not one solid bone but many little flexible bones. The second part of the skeleton is the metacarpus. The metacarpus looks like five extension fingers. The third part of the skeleton is the fingers. The fingers consist of 8 major divisions. It is made up of the little finger, ring finger, second finger, and the index finger. The ring finger is where you usually wear rings. Then last of all is the thumb. The thumb is made to touch the rest of the other four fingers which make us very different from animals, therefore we are superior to animals for that reason. So the skeleton of the hand is very important and very remarkable.

The Skeleton of the Foot

The skeleton of the foot is divided into three main divisions. The carpus in the hand is shaped similiar to the tarsus in the foot. The tarsus is the ankle like the wrist of a hand. The tarsus is made up of six small bones, 1 heel bone, or the os calsis. The second division of the foot is the metatarpus which is made up of five long slender bones. The next metacarpus in the hand is equivalent to the metatarpus in the foot. The five long bones are covered by flesh to protect them. The third division of the foot are the phalanges or toes. The toes of a foot are flexible just like the fingers of a hand. There are five toes. The great toe or the hallux, the second toe, the third toe, the fourth toe, and the fifth toe or the little toe. The skeleton of the foot is also similiar to the skeleton of the hand.

BIBLIOGRAPHY

Blount, Nathan S., ed. "A Summary of Investigations Relating to the English Language Arts in Secondary Education: 1965." English Journal, LV (May, 1966), 595-96.

Francis, W. Nelson. The Structure of American English. New York: The Ronald Press Company, 1958.

Griffin, William J. Lecture, George Peabody College for Teachers. July 28, 1965.

Hays, W. L. Statistics for Psychologists. New York: Holt, Rinehart & Winston, 1965.

Marquardt, William F. "Programmed Instruction: General Principles for the Teaching of English as a Second Language." Language Learning, XIII (1963), 77-83.

Roberts, Paul. English Sentences. New York: Harcourt, Brace & World, Inc., 1962.

______. Patterns of English. New York: Harcourt, Brace & World, Inc., 1956.

Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill, 1956.

Singleton, Carlton M., ed., Ralph Staigner, Theodore Clymer, Samuel Becker, Paul B. Diederich, and Walter Hill. Research Methods in the Language Arts. A Report Prepared by the National Conference on Research in English. Champaign, Ill.: National Council of Teachers of English, n.d.

Summey, George, Jr. American Punctuation. New York: The Ronald Press Company, 1949.

Tovatt, Anthony. "Oral-Aural-Visual Stimuli for Teaching Composition." English Journal, LIV (March, 1965), 191-95.

______, and Ebert L. Miller. "The Sound of Writing." Research in the Teaching of English, I (Fall, 1967), 176-89.

Warriner, John E., Mary E. Whitten, and Francis Griffith. English Grammar and Composition 9. Rev. ed. New York: Harcourt, Brace & World, Inc., 1965.

Whitehall, Harold. Structural Essentials of English. New York: Harcourt, Brace & World, Inc., 1956.